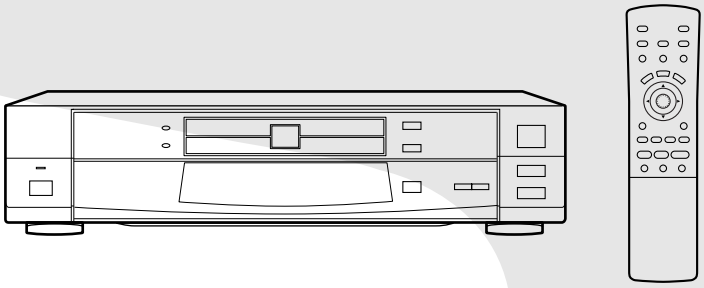
TOSHIBA

FILE NO. 810-200002

SERVICE MANUAL

DVD VIDEO PLAYER

SD-2200



Mar., 2000 Ⓢ

LASER BEAM CAUTION LABEL

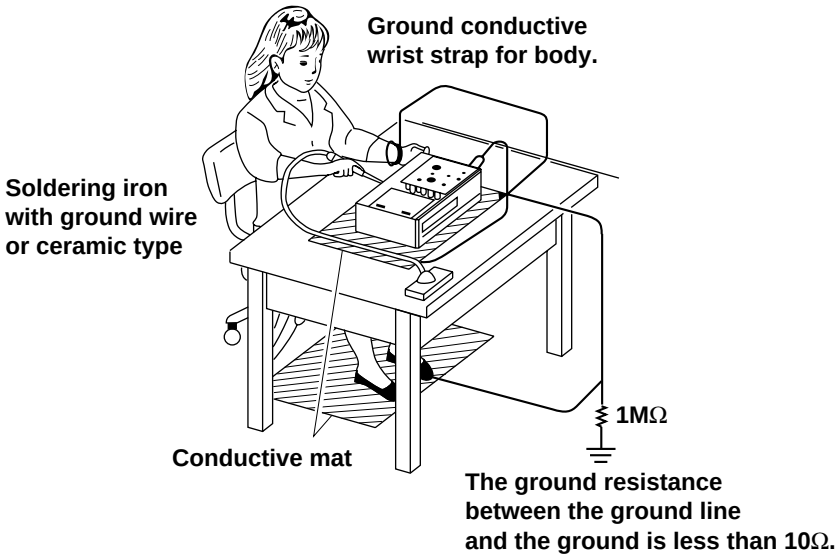
When the power supply is being turned on, you may not remove this laser cautions label. If it removes, radiation of a laser may be recceived.

PREPARATION OF SERVICING

Pickup Head consists of a laser diode that is very susceptible to external static electricity.

Although it operates properly after replacement, if it was subject to electrostatic discharge during replacement, its life might be shortened. When replacing, use a conductive mat, soldering iron with ground wire, etc. to protect the laser diode from damage by static electricity.

And also, the LSI and IC are same as above.



SAFETY NOTICE

SAFETY PRECAUTIONS

LEAKAGE CURRENT CHECK

Plug the AC line cord directly into a 120V AC outlet (do not use an isolation transformer for this check). Use an AC voltmeter, having 5000 Ω per volt or more sensitivity.

Connect a 1500 Ω 10 W resistor, paralleled by a 0.15 µF 150V AC capacitor between a known good earth ground (water pipe, conduit, etc.) and all exposed metal parts of cabinet (antennas, handle bracket, metal cabinet screwheads, metal overlays, control shafts, etc.).

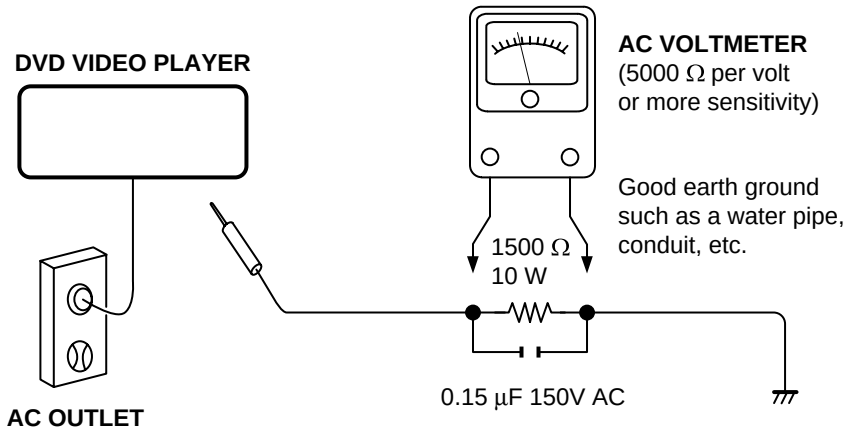
Measure the AC voltage across the 1500 Ω resistor.

The test must be conducted with the AC switch on and then repeated with the AC switch off. The AC voltage indicated by the meter may not exceed 0.3 V. A reading exceeding 0.3 V indicates that a dangerous potential exists, the fault must be located and corrected.

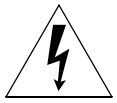
Repeat the above test with the DVD VIDEO PLAYER power plug reversed.

NEVER RETURN A DVD VIDEO PLAYER TO THE CUSTOMER WITHOUT TAKING NECESSARY CORRECTIVE ACTION.

READING SHOULD NOT EXCEED 0.3V



Test all exposed metal.
Voltmeter Hook-up for Leakage Current Check



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

CONTENTS

SECTION 1
GENERAL DESCRIPTIONS

1. OPERATING INSTRUCTIONS
2. LOCATION OF MAIN PARTS AND MECHANISM PARTS
   - 2-1. Location of Main Parts
   - 2-2. Location of Mechanism Parts
3. TROUBLESHOOTING
   - 3-1. Main Circuit
   - 3-1-1. Servo System
   - 3-1-2. Location Diagram of Servo Test Point

SECTION 2
PART REPLACEMENT AND ADJUSTMENT PROCEDURES

1. REPLACEMENT OF MECHANICAL PARTS
   - 1-1. Cabinet Replacement
   - 1-1-1. Top Cover
   - 1-1-2. Tray Panel
   - 1-1-3. Front Panel
   - 1-1-4. Rear Panel
   - 1-2. PC Board Replacement
   - 1-2-1. Main PC Board
   - 1-2-2. Output PC Board
   - 1-2-3. Power Supply PC board
   - 1-2-4. Front Display and Power SW PC Boards
   - 1-3. Mechanism Parts Replacement
   - 1-3-1. Mechanism Chassis Assembly
   - 1-3-2. Loading Belt
   - 1-3-3. Loading Motor
   - 1-3-4. Pickup Mechanism Assembly
   - 1-3-5. Gear A Assembly, Gear B and Rack Gear Assembly
   - 1-3-6. Feed Motor
   - 1-4. Tray Replacement
   - 1-4-1. Tray Removal
   - 1-4-2. Tray Mounting

SECTION 3
SERVICING DIAGRAMS

1. STANDING PC BOARDS FOR SERVICING
2. CIRCUIT SYMBOLS AND SUPPLEMENTARY EXPLANATION
   - 2-1. Precautions for Part Replacement
   - 2-2. Solid Resistor Indication
   - 2-3. Capacitance Indication
   - 2-4. Inductor Indication
   - 2-5. Waveform and Voltage Measurement
   - 2-6. When Replaced ROM ICs or Upgraded Firmware
3. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM
4. BLOCK DIAGRAMS
   - 4-1. Overall Block Diagram
   - 4-2. Power Supply Block Diagram
   - 4-3. Front Display, Power Switch Block Diagram
   - 4-4. Main Block Diagrams
   - 4-5. Output Block Diagram
5. CIRCUIT DIAGRAMS
   - 5-1. Power Supply Circuit Diagram
   - 5-2. Front Display, Power Switch Circuit Diagram
   - 5-3. Main Circuit Diagram
   - 5-4. Output Circuit Diagram
   - 5-5. Motor System Circuit Diagrams
6. PC BOARDS
   - 6-1. Power Supply PC Board
   - 6-2. Power Switch PC Board
   - 6-3. Disc LED PC Board
   - 6-4. Main PC Board
   - 6-5. Output PC Board
   - 6-6. Front Display PC Board

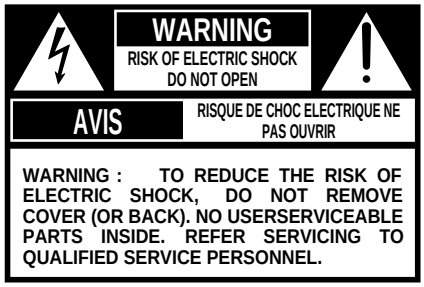
SECTION 4
PARTS LIST

SAFETY PRECAUTION
NOTICE
ABBREVIATIONS
   - 1. Integrated Circuit (IC)
   - 2. Capacitor (Cap)
   - 3. Resistor (Res)

4. EXPLODED VIEWS
   - 4-1. Packing Assembly
   - 4-2. Chassis Assembly
   - 4-3. Mechanism Assembly
5. PARTS LIST

SECTION 1
GENERAL DESCRIPTIONS

1. OPERATING INSTRUCTIONS


WARNING
RISK OF ELECTRIC SHOCK
DO NOT OPEN
AVIS
RISQUE DE CHOC ELECTRIQUE NE
PAS OUVRIR
WARNING : TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USERSERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: **TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DANGEROUS HIGH VOLTAGES ARE PRESENT INSIDE THE ENCLOSURE. DO NOT OPEN THE CABINET. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.**

CAUTION: **TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.**

ATTENTION: **POUR EVITER LES CHOCS ELECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU’AU FOND.**

CAUTION: This Digital Video Disc Player employs a Laser System.
To ensure proper use of this product, please read this owner’s manual carefully and retain for future reference. Should the unit require maintenance, contact an authorized service location - see service procedure.

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

To prevent direct exposure to laser beam, do not try to open the enclosure.
Visible laser radiation when open and interlocks defeated.
DO NOT STARE INTO BEAM.

FCC NOTICE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rule. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

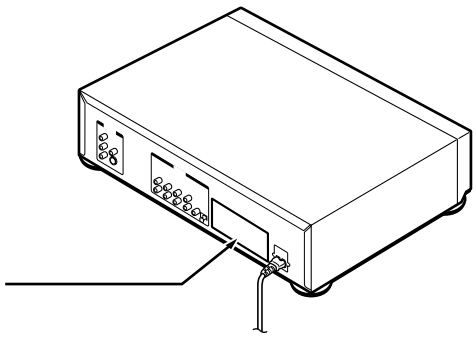
WARNING: Changes or modifications made to this equipment, not expressly approved by Toshiba, or parties authorized by Toshiba, could void the user’s authority to operate the equipment.

In the spaces provided below, record the Model and Serial No. located on the rear panel of your DVD video player.

Model No. _____ Serial No. _____

Retain this information for future reference.

Location of the required label



PRODUCT IS CERTIFIED BY THE MANUFACTURER TO COMPLY WITH DHHS RULE 21 CFR SUBCHAPTER J APPLICABLE AT THE DATE OF MANUFACTURE.

MANUFACTURED

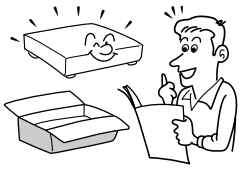
T O S H I B A C O R P O R A T I O N
1-1,SHIBAURA 1-CHOME,MINATO-KU.
TOKYO 105-8001,JAPAN

IMPORTANT SAFETY INSTRUCTIONS

CAUTION: PLEASE READ AND OBSERVE ALL WARNINGS AND INSTRUCTIONS GIVEN IN THIS OWNER'S MANUAL AND THOSE MARKED ON THE UNIT. RETAIN THIS BOOKLET FOR FUTURE REFERENCE.

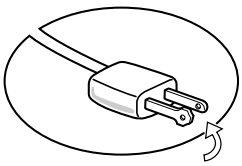
This set has been designed and manufactured to assure personal safety. Improper use can result in electric shock or fire hazard. The safeguards incorporated in this unit will protect you if you observe the following procedures for installation, use and servicing. This unit is fully transistorized and does not contain any parts that can be repaired by the user.
DO NOT REMOVE THE CABINET COVER, OR YOU MAY BE EXPOSED TO DANGEROUS VOLTAGE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL ONLY.

1. Read owner's manual
   After unpacking this product, read the owner's manual carefully, and follow all the operating and other instructions.



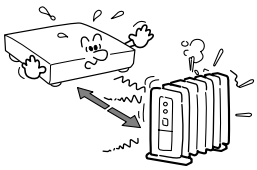
2. Power Sources
   This product should be operated only from the type of power source indicated on the label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.

3. Grounding or Polarization
   This product may be equipped with a polarized alternating current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

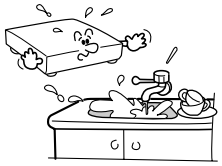


4. Ventilation
   Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

5. Heat
   The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.



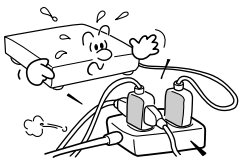
6. Water and Moisture
   Do not use this product near water - for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool and the like.



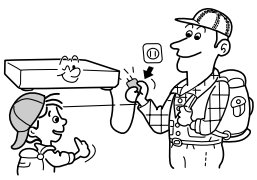
7. Cleaning
   Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

8. Power-Cord Protection
   Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.

9. Overloading
   Do not overload wall outlets; extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.



10. Lightning
    For added protection for this product during storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power-line surges.



11. Object and Liquid Entry
    Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

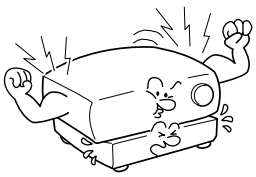
12. Attachments
    Do not use attachments not recommended by the product manufacturer as they may cause hazards.

IMPORTANT SAFETY INSTRUCTIONS

13. Accessories
Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.
A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.

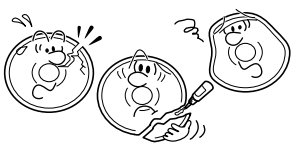
14. Disc Tray
Keep your fingers well clear of the disc tray as it is closing. Neglecting to do so may cause serious personal injury.

15. Burden
Do not place a heavy object on or step on the product. The object may fall, causing serious personal injury and serious damage to the product.



16. Headphones
When you use headphones, keep the volume at a moderate level. If you use the headphones continuously with high volume sound, it may cause hearing damage.

17. Disc
Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and product malfunction.

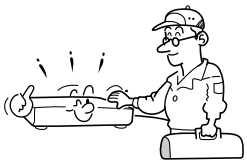


18. Damage Requiring Service
Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
a) When the power-supply cord or plug is damaged.
b) If liquid has been spilled, or objects have fallen into the product.
c) If the product has been exposed to rain or water.
d) If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
e) If the product has been dropped or damaged in any way.
f) When the product exhibits a distinct change in performance - this indicates a need for service.

19. Servicing
Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

20. Replacement Parts
When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

21. Safety Check
Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.



Precautions

Notes on handling

- When shipping the DVD video player, the original shipping carton and packing materials come in handy. For maximum protection, repack the unit as it was originally packed at the factory.
- Do not use volatile liquids, such as insect spray, near the DVD video player. Do not leave rubber or plastic products in contact with the DVD video player for a long time. They will leave marks on the finish.
- The top and rear panels of the DVD video player may become warm after a long period of use. This is not a malfunction.
- When the DVD video player is not in use, be sure to remove the disc and turn off the power.
- If you do not use the DVD video player for a long period, the unit may not function properly in the future. Turn on and use the DVD video player occasionally.

Notes on locating

- Place the DVD video player on a level surface. Do not use it on a shaky or unstable surface such as a wobbling table or inclined stand. The loaded disc may come off the proper position and cause damage to the DVD video player.
- When you place this DVD video player near a TV, radio, or VCR, the playback picture may become poor and the sound may be distorted. In this case, place the DVD video player away from the TV, radio, or VCR.

Notes on cleaning

Use a soft, dry cloth for cleaning.

- For stubborn dirt, soak the cloth in a weak detergent solution, wring well and wipe. Use a dry cloth to wipe it dry.
  Do not use any type of solvent, such as thinner and benzine, as they may damage the surface of the DVD video player.
- If you use a chemical saturated cloth to clean the unit, follow that product's instructions.

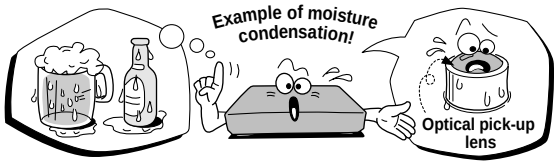
To obtain a clear picture

The DVD video player is a high technology, precision device. If the optical pick-up lens and disc drive parts are dirty or worn down, the picture quality becomes poor. To obtain a clear picture, we recommend regular inspection and maintenance (cleaning or parts replacement) every 1,000 hours of use depending on the operating environment. For details, contact your nearest dealer.

Notes on moisture condensation

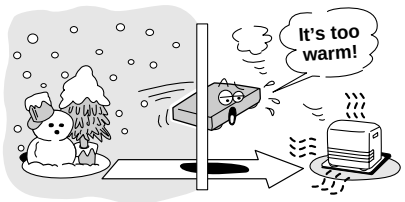
Moisture condensation damages the DVD video player. Please read the following carefully.

Moisture condensation occurs, for example, when you pour a cold drink into a glass on a warm day. Drops of water form on the outside of the glass. In the same way, moisture may condense on the optical pick-up lens inside this unit, one of the most crucial internal parts of the DVD video player.



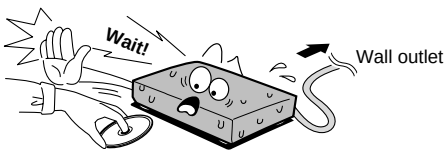
■ Moisture condensation occurs during the following cases.

- When you bring the DVD video player directly from a cold place to a warm place.
- When you use the DVD video player in a room where you just turned on the heater, or a place where the cold wind from the air conditioner directly hits the unit.
- In summer, when you use the DVD video player in a hot and humid place just after you move the unit from an air conditioned room.
- When you use the DVD video player in a humid place.



■ Do not use the DVD video player when moisture condensation may occur.

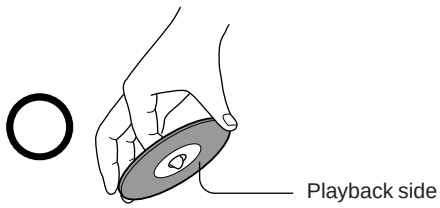
If you use the DVD video player in such a situation, it may damage discs and internal parts. Remove the disc, connect the power cord of the DVD video player to the wall outlet, turn on the DVD video player, and leave it for two or three hours. After two or three hours, the DVD video player will have warmed up and evaporated any moisture. Keep the DVD video player connected to the wall outlet and moisture condensation will seldom occur.



Notes on Discs

On handling discs

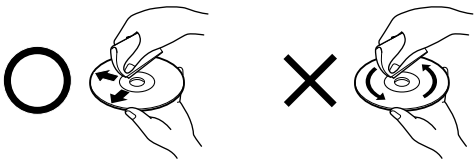
- Do not touch the playback side of the disc.



- Do not attach paper or tape to discs.

On cleaning discs

- Fingerprints and dust on the disc cause picture and sound deterioration. Wipe the disc from the center outwards with a soft cloth. Always keep the disc clean.



- If you cannot wipe off the dust with a soft cloth, wipe the disc lightly with a slightly moistened soft cloth and finish with a dry cloth.
- Do not use any type of solvent such as thinner, benzine, commercially available cleaners or antistatic spray for vinyl LPs. It may damage the disc.

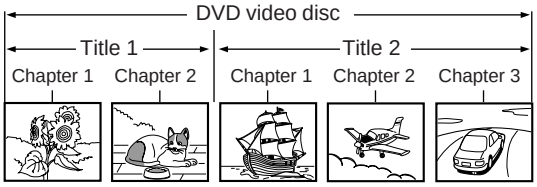
On storing discs

- Do not store discs in a place subject to direct sunlight or near heat sources.
- Do not store discs in places subject to moisture and dust such as a bathroom or near a humidifier.
- Store discs vertically in a case. Stacking or placing objects on discs outside of their case may cause warping.

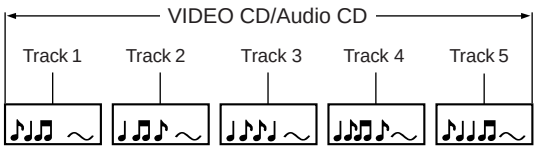
Structure of disc contents

Normally, DVD video discs are divided into titles, and the titles are sub-divided into chapters. VIDEO CDs/audio CDs are divided into tracks.

DVD video disc



VIDEO CD/Audio CD



Each title, chapter or track is assigned a number, which is called “title number”, “chapter number” or “track number” respectively.
There may be discs that do not have these numbers.

Notes on copyright

It is forbidden by law to copy, broadcast, show, broadcast on cable, play in public, and rent copyrighted material without permission.

DVD video discs are copy protected, and any recordings made from these discs will be distorted.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Notes on Discs (continued)

About this owner's manual

This owner's manual explains the basic instructions of this DVD video player. Some DVD video discs are produced in a manner that allows specific or limited operation during playback. As such, the DVD video player may not respond to all operating commands. This is not a defect in the DVD video player. Refer to instruction notes of discs.

"⃠" may appear on the TV screen during operation. A "⃠" means that the operation is not permitted by the DVD video player or the disc.

Notes on region numbers

The region number of this DVD video player is 1. If region numbers, which stand for their playable area, are printed on your DVD video disc and you do not find or , disc playback will not be allowed by the player. (In this case, the DVD video player will display a message on-screen.)

On VIDEO CDs

This DVD video player supports VIDEO CDs equipped with the PBC (Version 2.0) function. (PBC is the abbreviation of Playback Control.) You can enjoy two playback variations depending on types of discs.

- **VIDEO CD not equipped with PBC function (Version 1.1)**
  Sound and movie can be played on this DVD video player in the same way as an audio CD.
- **VIDEO CD equipped with PBC function (Version 2.0)**
  In addition to operation of a VIDEO CD not equipped with the PBC function, you can enjoy playback of interactive software with search function by using the menu displayed on the TV screen (Menu Playback). Some of the functions described in this owner's manual may not work with some discs.

Playable discs

This DVD video player can play the following discs.

	Disc Mark	Contents	Disc Size	Maximum playback time
DVD video discs	DVD VIDEO	Audio + video (moving pictures)	12 cm	Approx. 4 hours (single sided disc)
				Approx. 8 hours (double sided disc)
			8 cm	Approx. 80 minutes (single sided disc)
				Approx. 160 minutes (double sided disc)
VIDEO CDs	COMPACT disc DIGITAL VIDEO	Audio + video (moving pictures)	12 cm	Approx. 74 minutes
			8 cm	Approx. 20 minutes
Audio CDs	COMPACT disc DIGITAL AUDIO	Audio	12 cm	Approx. 74 minutes
			8 cm (CD single)	Approx. 20 minutes

- You cannot play discs other than those listed above.
- You cannot play discs of CD-R, CD-RW, DVD-RAM, DVD-RW, etc., even if they may be labeled marks listed above.
- This DVD video player uses the NTSC color system, and cannot play DVD video discs recorded in any other color system (PAL, SECAM, etc.).

Table of Contents

Introduction

● SAFETY PRECAUTIONS 2
● IMPORTANT SAFETY INSTRUCTIONS ... 4
● Precautions 8
● Notes on Discs 9
Notes on region numbers 10
● Table of Contents 11
● Identification of Controls 12
Front panel 12
Rear panel 12
DVD display 13
Remote control 14
Loading batteries 15
Operating with the remote control 15

Connections

● Connecting to a TV 16
Connecting to a TV 16
Connecting to an audio system and TV equipped with ColorStream™ (Component video) inputs 17
● Connecting to Optional Equipment 18
Connecting to an amplifier equipped with a Dolby Digital decoder 18
Connecting to an amplifier equipped with 5.1ch audio inputs 18
Connecting to an amplifier equipped with Dolby Pro Logic Surround 18
Connecting to an amplifier equipped with a DTS decoder 19
Connecting to an amplifier equipped with an MPEG2 audio decoder 19
Connecting to an amplifier equipped with a digital audio input 19

Basic playback

● Playing a Disc 20
Basic playback 20
Playing fast in reverse or forward direction 22
Playing frame by frame 22
Playing in slow-motion 23
Resuming playback from the same location ... 23
● Locating a Specific Title, Chapter, or Track 24
Locating a title using the top menu 24
Locating a title by entering the title number 24
Locating a specific chapter or track directly 25
Locating a specific chapter or track 25

Advanced playback

● Locating a Specific Location Directly ... 26
Entering the time of the desired location 26
● Playing Repeatedly 27
Repeating a title, chapter, or track 27
Repeating a specific segment 27
● Playing in a Favorite Order 28
Setting titles, chapters, or tracks in a favorite order 28
● Playing in Random Order 29
Playing titles, chapters or tracks in random order 29
● Zooming a Picture 30
Zooming a Picture 30
● Selecting 3-D (N-2-2) Sound Enhancement 30
Selecting 3-D (N-2-2) Sound Enhancement ... 30
● Selecting the Camera Angle 31
Changing the camera angle 31
● Selecting Subtitles 32
Selecting a subtitle language 32
● Selecting a Language 33
Selecting a playback audio setting 33
● Viewing the Operational Information and DVD/CD-Text 34
Checking the operational status 34
Checking the remaining time and setting status 34

Function setup

● Customizing the Function Settings 35
Setting procedure 35
Setting details 37

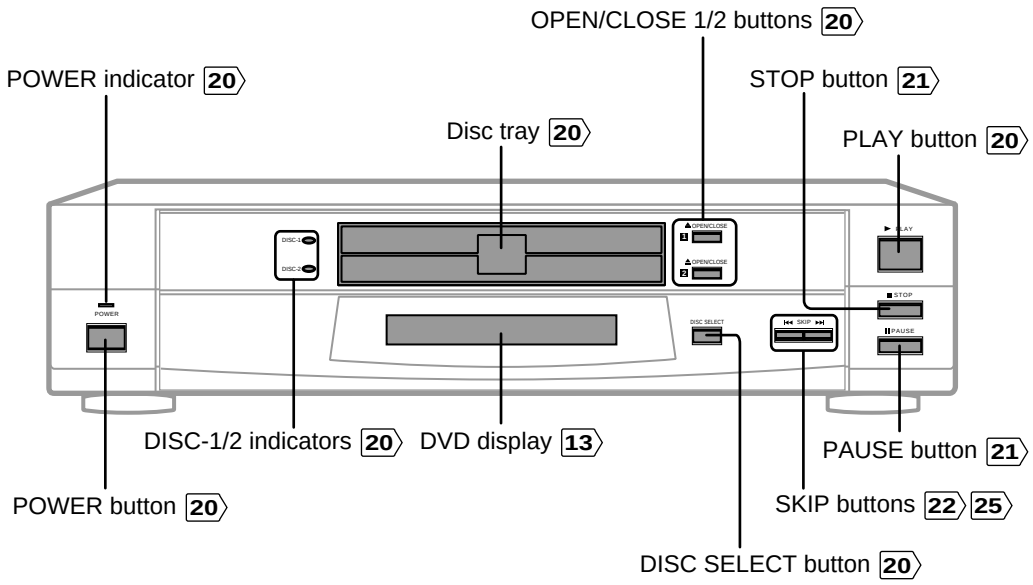
Others

● Table of Languages 43
● Before Calling Service Personnel 44
● Specifications 45
● LIMITED WARRANTY DVD VIDEO PLAYER 46

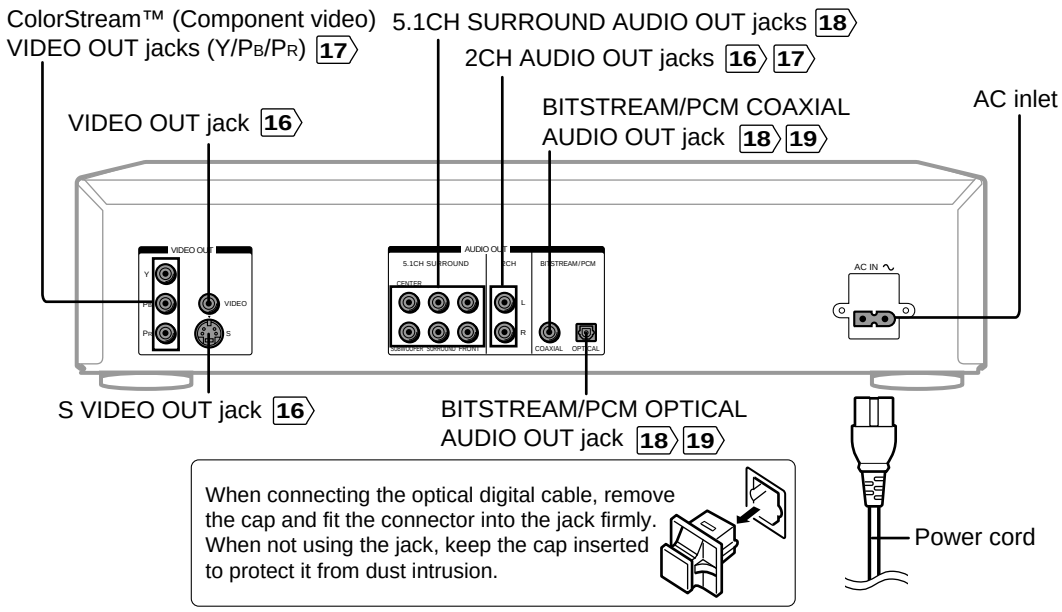
Identification of Controls

See the page in ⟨ ⟩ for details.

Front panel



Rear panel

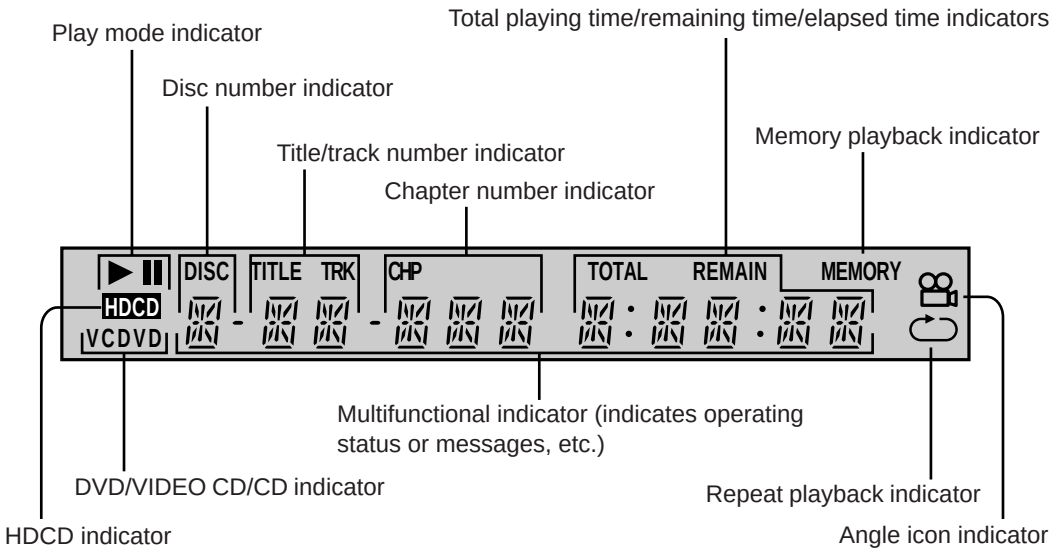

ColorStream™ (Component video) VIDEO OUT jacks (Y/PB/PR) 17
5.1CH SURROUND AUDIO OUT jacks 18
2CH AUDIO OUT jacks 16 17
VIDEO OUT jack 16
BITSTREAM/PCM COAXIAL AUDIO OUT jack 18 19
AC inlet
S VIDEO OUT jack 16
BITSTREAM/PCM OPTICAL AUDIO OUT jack 18 19
Power cord

When connecting the optical digital cable, remove the cap and fit the connector into the jack firmly. When not using the jack, keep the cap inserted to protect it from dust intrusion.

DVD display

■ **Pressing of the FL DIMMER button on the remote control changes the brightness of the display.**

Normal → Dimmed → Off



The indicators vary depending on the kinds of discs you play.

DVD video disc

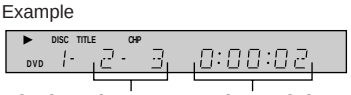
- When closing the disc tray:

Example

Total number of titles

- During playback:

Example



Playing chapter 3 of title 2

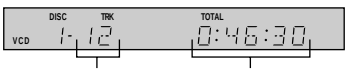
Elapsed time of the current title

Some discs may not display chapter numbers or elapsed time.

VIDEO CD

- When closing the disc tray:

Example

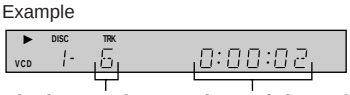


Total number of tracks

Total playing time of the disc

- During playback:

Example



Playing track 6

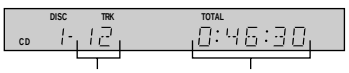
Elapsed time of the current track

Some discs may not display track numbers or elapsed time.

Audio CD

- When closing the disc tray:

Example



Total number of tracks

Total playing time of the disc

- During playback:

Example

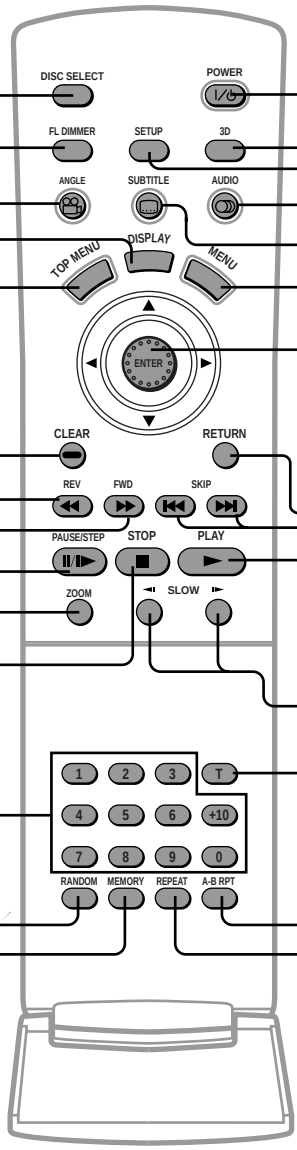
Playing track 6

Elapsed time of the current track

Identification of Controls (continued)

The instructions in this manual describe the functions on the remote control. See the page in ⟨ ⟩ for details.

Remote control



DISC SELECT button ⟨20⟩

FL DIMMER button ⟨13⟩

ANGLE button ⟨31⟩

DISPLAY button ⟨34⟩

TOP MENU button ⟨24⟩

CLEAR button ⟨25⟩

REV button ⟨22⟩

FWD button ⟨22⟩

PAUSE/STEP button ⟨21⟩

ZOOM button ⟨30⟩

STOP button ⟨21⟩

Number buttons ⟨24⟩

RANDOM button ⟨29⟩

MEMORY button ⟨28⟩

POWER button ⟨20⟩

3D button ⟨30⟩

SETUP button ⟨35⟩

AUDIO button ⟨33⟩

SUBTITLE button ⟨32⟩

MENU button*

Cursor control/ENTER button ⟨35⟩

- Cursor control – to move the cursor
  Push toward the direction you want (▲/▼/◀/▶).
- ENTER button – to enter your selection
  Press the center vertically.

RETURN button ⟨35⟩

SKIP buttons ⟨22⟩ ⟨25⟩

PLAY button ⟨20⟩

SLOW buttons ⟨23⟩

T button ⟨24⟩

A-B RPT button ⟨27⟩

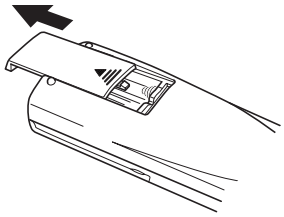
REPEAT button ⟨27⟩

Open the cover.

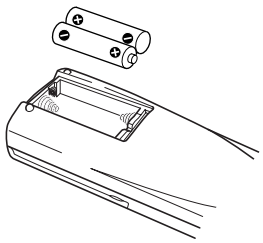
*** MENU button**
Use the MENU button to display the menu included on many DVD video discs. To operate a menu, follow the instructions in “Locating a title using the top menu.” ⟨24⟩

Loading batteries

1 **Open the cover.**

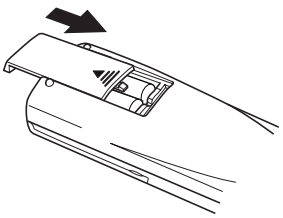


2 **Insert batteries (AAA size).**



Make sure to match the + and – on the batteries to the marks inside the battery compartment.

3 **Close the cover.**



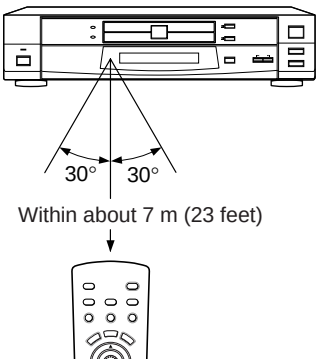
Notes on batteries

Improper use of batteries may cause battery leakage and corrosion. To operate the remote control correctly, follow the instructions below.

- Do not insert batteries into the remote control in the wrong direction.
- Do not charge, heat, open, or short-circuit the batteries. Do not throw batteries into a fire.
- Do not leave dead or exhausted batteries in the remote control.
- Do not use different types of batteries together, or mix old and new batteries.
- If you do not use the remote control for a long period of time, remove the batteries to avoid possible damage from battery corrosion.
- If the remote control does not function correctly or if the operating range becomes reduced, replace all batteries with new ones.
- If battery leakage occurs, wipe the battery liquid from the battery compartment, then insert new batteries.

Operating with the remote control

Point the remote control at the remote sensor and press the buttons.



Distance: About 7 m (23 feet) from the front of the remote sensor
Angle: About 30° in each direction of the front of the remote sensor

* Do not expose the remote sensor of the DVD video player to a strong light source such as direct sunlight or other illumination. If you do so, you may not be able to operate the DVD video player via the remote control.

Notes on the remote control

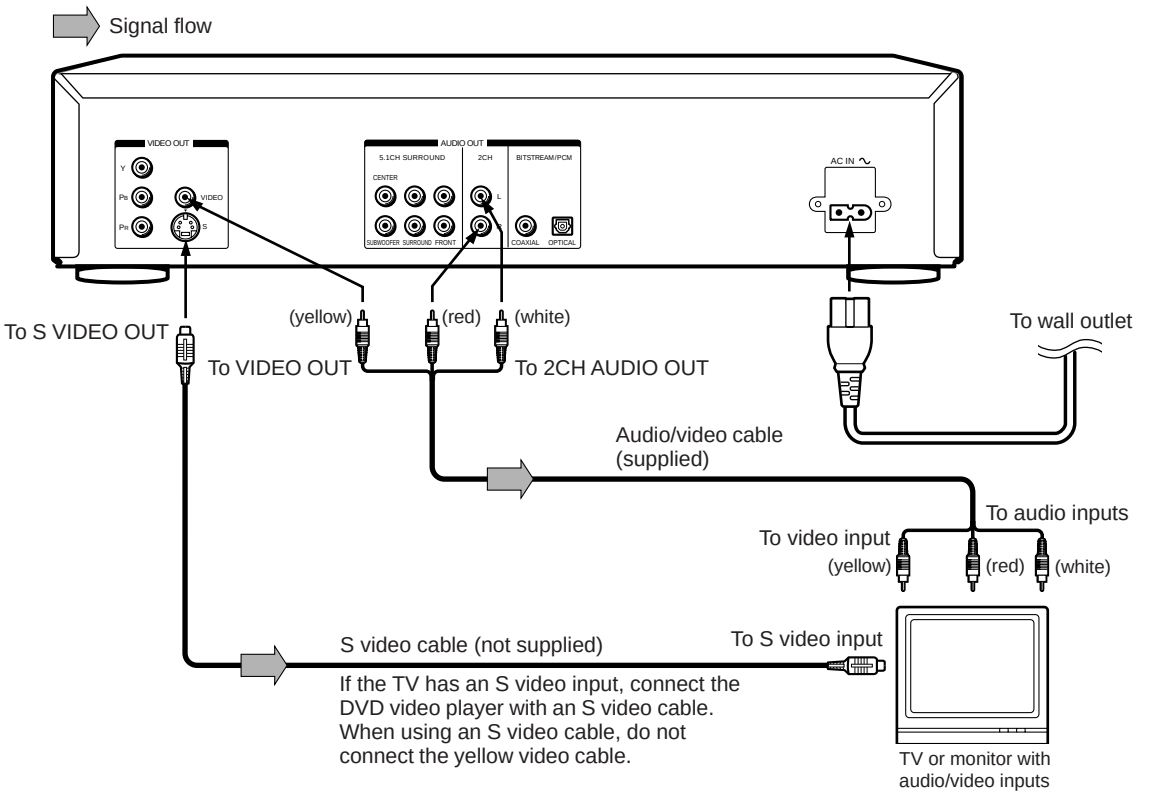
- Direct the remote control at the remote sensor of the DVD video player.
- Do not drop or give the remote control a shock.
- Do not leave the remote control near an extremely hot or humid place.
- Do not spill water or put anything wet on the remote control.
- Do not open the remote control.

Connecting to a TV

Connect the DVD video player to your TV.

For details of output sound, see 33.

Connecting to a TV



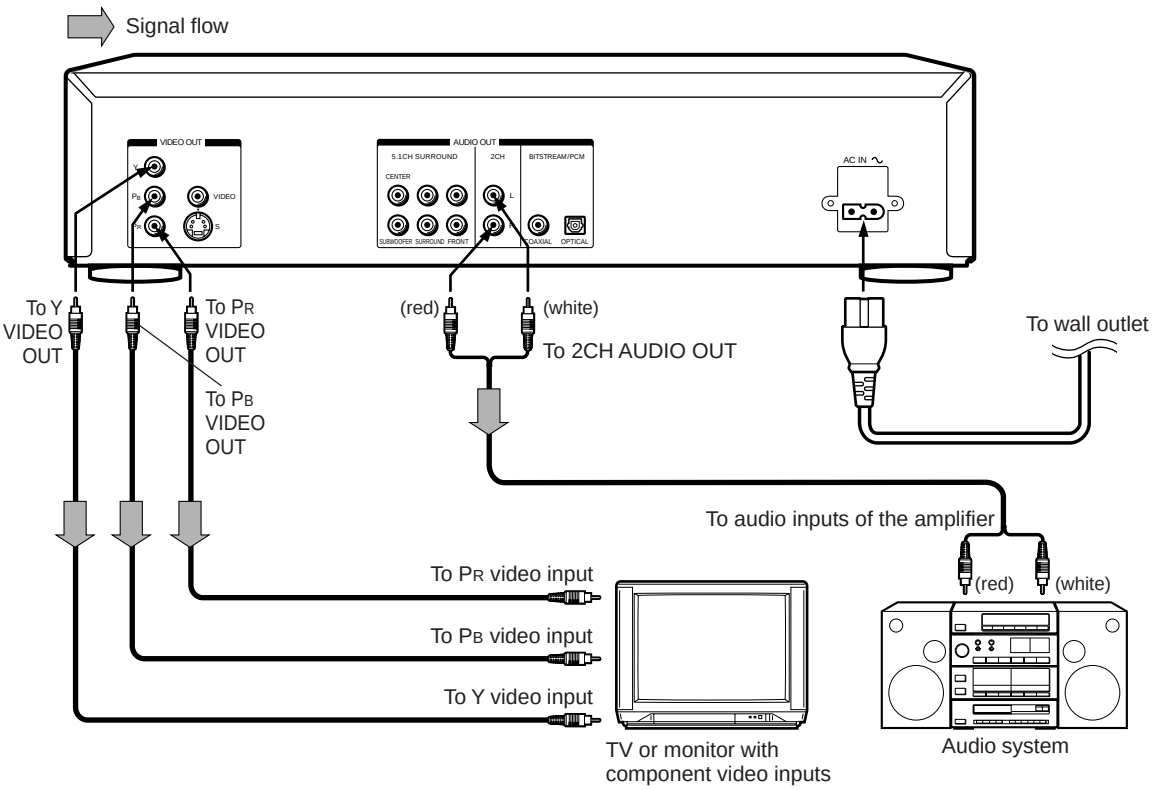
- Make the following setting.

Setting	Select:	Page
“Audio Out Select”	“Analog 2ch”	35 39

Notes

- Refer to the owner’s manual of the connected TV as well.
- When you connect the DVD video player to your TV, be sure to turn off the power and unplug both units from the wall outlet before making any connections.
- If your television set has one audio input, connect the DVD video player to a Y cable adapter (not supplied) and then connect to your TV.
- Connect the DVD video player directly to your TV. If you connect the DVD video player to a VCR, TV/VCR combination or video selector, the playback picture may be distorted as DVD video discs are copy protected.

Connecting to an audio system and TV equipped with ColorStream™ (Component video) inputs



ColorStream™ (Component video) outputs/inputs
Some TVs or monitors are equipped with component video inputs. Connecting to these inputs allows you to enjoy higher quality picture playback.
Actual labels for component video inputs may vary depending on the TV manufacturer. (ex. Y, R-Y, B-Y or Y, C_B, C_R)
In some TVs or monitors, the color levels of the playback picture may be reduced slightly or the tint may change. In such a case, adjust the TV or monitor for optimum performance.

- Make the following setting.

Setting	Select:	Page
“Audio Out Select”	“Analog 2ch”	35 39

Notes
- Refer to the owner’s manual of the connected equipment as well.
- When you connect the DVD video player to other equipment, be sure to turn off the power and unplug all of the equipment from the wall outlet before making any connections.
- If you place the DVD video player near a tuner or radio, the radio broadcast sound might be distorted. In this case, place the DVD video player away from the tuner and radio.
- The output sound of the DVD video player has a wide dynamic range. Be sure to adjust the receiver’s volume to a moderate listening level. Otherwise, the speakers may be damaged by a sudden high volume sound.
- Turn off the amplifier before you connect or disconnect the DVD video player’s power cord. If you leave the amplifier power on, the speakers may be damaged.

Connecting to Optional Equipment

You can enjoy high quality dynamic sounds by connecting the DVD video player to optional audio equipment.

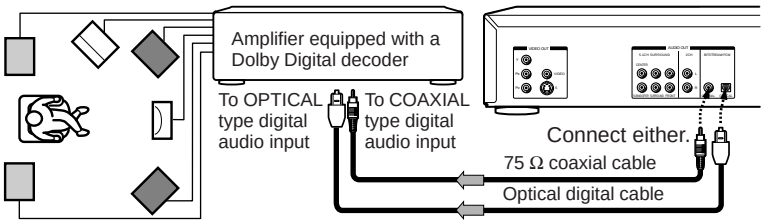
For connection to your TV, see “Connecting to a TV” 16 17.
For details of output sound, see 33.

: Front speaker : Center speaker
: Rear speaker : Signal flow
: Sub woofer

Connecting to an amplifier equipped with a Dolby Digital decoder

Dolby Digital
Dolby Digital is the surround sound technology used in theaters showing the latest movies, and is now available to reproduce this realistic effect in the home. You can enjoy motion picture and live concert DVD video discs with this dynamic realistic sound by connecting the DVD video player to a 6 channel amplifier equipped with a Dolby Digital decoder or Dolby Digital processor. If you have a Dolby Pro Logic Surround decoder, you will obtain the full benefit of Pro Logic from the same DVD movies that provide full 5.1-channel Dolby Digital soundtracks, as well as from titles with the Dolby Surround mark.

Manufactured under license from Dolby Laboratories. “Dolby”, “Pro Logic” and the double-D symbol are trademarks of Dolby Laboratories. Confidential unpublished works. ©1992-1997 Dolby Laboratories. All rights reserved.

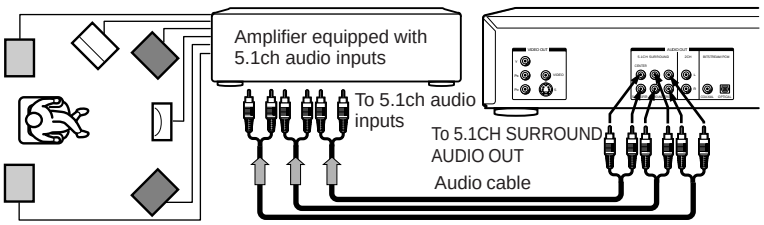

Amplifier equipped with a Dolby Digital decoder
To OPTICAL type digital audio input
To COAXIAL type digital audio input
Connect either.
75 Ω coaxial cable
Optical digital cable

- Use DVD video discs encoded via the Dolby Digital recording system.
- Make the following setting.

Setting	Select:	Page
“Audio Out Select”	“Bitstream”	35 39
Recording system	DD D	33

Connecting to an amplifier equipped with 5.1ch audio inputs

5.1ch surround sound
The Dolby Digital decoder equipped with this DVD video player enables you to obtain the full benefit of 5.1 channel Dolby Digital sound tracks when you connect the DVD video player to a Dolby Digital ready amplifier equipped with 5.1 channel audio inputs.



- Use DVD video discs encoded via the Dolby Digital recording system.
- Make the following setting.

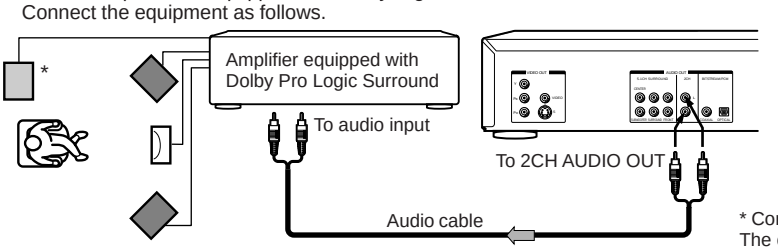
Setting	Select:	Page
“Audio Out Select”	“Analog 6ch”	35 39
Recording system	DD D	33

2 channel sound is output in the Dolby Pro Logic format. To obtain the original 2 channel sound, select “Analog 2ch.”

Connecting to an amplifier equipped with Dolby Pro Logic Surround

Dolby Pro Logic Surround
You can enjoy the dynamic realistic sound of Dolby Pro Logic Surround by connecting an amplifier and speaker system (right and left front speakers, a center speaker, and one or two rear speakers).

- With an amplifier equipped with Dolby Digital
  Connect the equipment the same way as described in “Connecting to an amplifier equipped with a Dolby Digital decoder.” Refer to that amplifier’s owner’s manual and set the amplifier so you can enjoy Dolby Pro Logic Surround sound.
- With an amplifier not equipped with Dolby Digital
  Connect the equipment as follows.



- Make the following setting.

Setting	Select:	Page
“Audio Out Select”	“Analog 2ch”	35 39

Be sure to set “Audio Out Select” to “Analog 2ch” when you enjoy sounds of Dolby Pro Logic Surround using this connection.

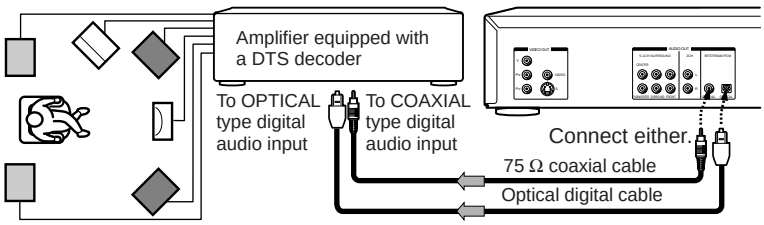
* Connect one or two rear speakers.
The output sound from the rear speakers will be monaural even if you connect two rear speakers.

Warning

- Do not set “Audio Out Select” to “Bitstream” from the on-screen displays [35] [39] unless you are connecting (via the BITSTREAM/PCM AUDIO OUT jack) an AV decoder that has the Dolby Digital, Digital Theater Systems (DTS) or MPEG2 decoding function. High volume sound may damage your hearing as well as the speakers.
- When playing DTS-encoded discs (DVD video discs and audio CDs), excessive noise may be output from the analog stereo jacks. To avoid possible damage to the audio system, you should take proper precautions when the 2CH AUDIO OUT jacks of the DVD video player are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1 channel DTS Digital Surround™ decoder system must be connected to the BITSTREAM/PCM AUDIO OUT jack of the DVD video player.

Connecting to an amplifier equipped with a DTS decoder

Digital Theater Systems (DTS)
DTS is a high quality surround technology used in theaters and now available for home use, on DVD video discs or audio CDs.
If you have a DTS decoder or processor, you can obtain the full benefit of 5.1 channel DTS encoded sound tracks on DVD video discs or audio CDs.


Amplifier equipped with a DTS decoder
To OPTICAL type digital audio input
To COAXIAL type digital audio input
Connect either.
75 Ω coaxial cable
Optical digital cable

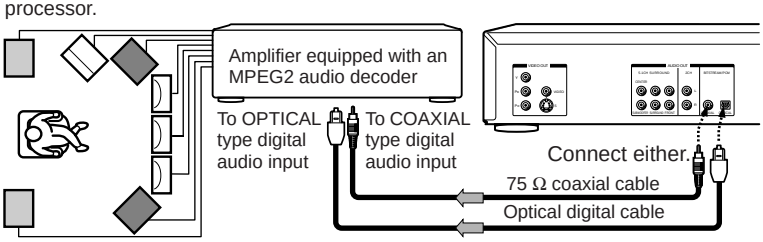
“DTS” and “DTS Digital Surround” are trademarks of Digital Theater Systems, Inc.

- Use DVD video discs or audio CDs encoded via the DTS recording system.
- Make the following setting.

Setting	Select:	Page
“Audio Out Select”	“Bitstream”	35 39
Recording system	DTS	33

Connecting to an amplifier equipped with an MPEG2 audio decoder

MPEG2 sound
You can enjoy motion picture and live concert DVD video discs with dynamic realistic sound by connecting an amplifier equipped with an MPEG2 audio decoder or MPEG2 audio processor.

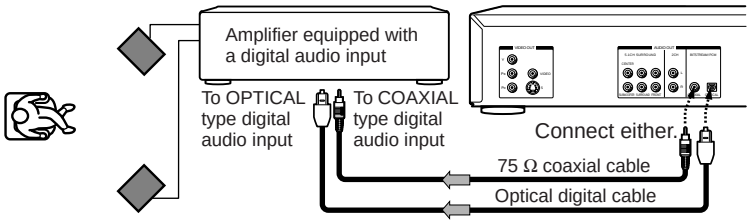

Amplifier equipped with an MPEG2 audio decoder
To OPTICAL type digital audio input
To COAXIAL type digital audio input
Connect either.
75 Ω coaxial cable
Optical digital cable

- Use DVD video discs encoded via the MPEG2 recording system.
- Make the following setting.

Setting	Select:	Page
“Audio Out Select”	“Bitstream”	35 39
Recording system	MPEG	33

Connecting to an amplifier equipped with a digital audio input

2 channel digital stereo
You can enjoy the dynamic sound of 2 channel digital stereo by connecting an amplifier equipped with a digital audio input and speaker system (right and left front speakers).


Amplifier equipped with a digital audio input
To OPTICAL type digital audio input
To COAXIAL type digital audio input
Connect either.
75 Ω coaxial cable
Optical digital cable

- Make the following setting.

Setting	Select:	Page
“Audio Out Select”	“PCM”	35 39

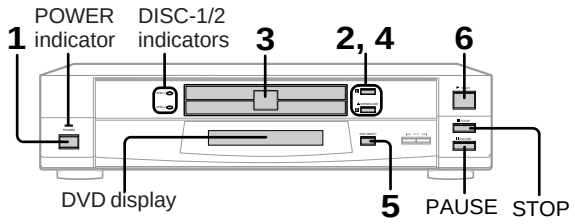
Notes

- DO NOT connect the BITSTREAM/PCM AUDIO OUT jack of the DVD video player to the AC-3 RF input of a Dolby Digital Receiver. This input on your A/V Receiver is reserved for Laserdisc use only and is incompatible with the BITSTREAM/PCM AUDIO OUT jack of the DVD video player.
- Connect the BITSTREAM/PCM AUDIO OUT jack of the DVD video player to the “OPTICAL” or “COAXIAL” input of a Receiver or Processor.
- Refer to the owner’s manual of the connected equipment as well.
- When you connect the DVD video player to other equipment, be sure to turn off the power and unplug all of the equipment from the wall outlet before making any connections.
- The output sound of the DVD video player has a wide dynamic range. Be sure to adjust the receiver’s volume to a moderate listening level. Otherwise, the speakers may be damaged by a sudden high volume sound.
- Turn off the amplifier before you connect or disconnect the DVD video player’s power cord. If you leave the amplifier power on, the speakers may be damaged.

Playing a Disc

This section shows you the basics on how to play a disc.

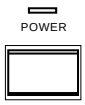
CAUTION
Keep your fingers well clear of the disc tray as it is closing. Neglecting to do so may cause serious personal injury.



DVD VCD CD Basic playback

Preparations
- When you want to view a disc, turn on the TV and select the video input connected to the DVD video player.
- When you want to enjoy the sound of discs from the audio system, turn on the audio system and select the input connected to the DVD video player.

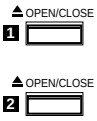
1 Press POWER.



The DVD video player turns on and the POWER indicator on the player illuminates.

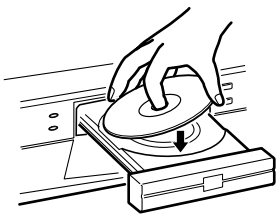
When the DVD video player is turned on for the first time, an initial set-up display appears. See "Initial set-up" and make the proper settings before proceeding to step 2.

2 Press OPEN/CLOSE (1/2).



Press either button you want. The disc tray opens.

3 Place a disc on the disc tray.

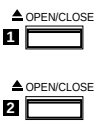


With the playback side down.

Do not place more than one disc.

- There are two different disc sizes. Place the disc in the correct guide on the disc tray. If the disc is out of the guide, it may damage the disc and cause the DVD video player to malfunction.
- Do not place anything except DVD video discs, VIDEO CDs or audio CDs on the disc tray.

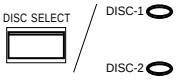
4 Press OPEN/CLOSE (1/2) to close the disc tray.



Press the button which you pressed in step 2.
To set another disc, press the other button.

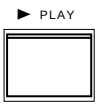
- Some discs may be automatically played after having been set. Even in the playback, you can select a disc to play in step 5.

5 Press DISC SELECT repeatedly to select the disc you want.



Red (lit): The disc is on standby or is being played.
Green (lit): Secondary standby.
Off: Playback does not start.

6 Press PLAY.



Playback starts.

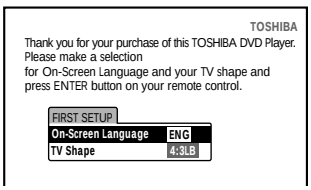
If you insert a DVD video disc that contains a title menu, a menu may appear. See "Locating a title using the top menu." 24
- You may need to press the TOP MENU or MENU button to display disc menu (depending on the actual DVD video disc.)

Note
Even while playing a disc, you can set another disc. Press the OPEN/CLOSE (1/2) button for a disc which is not played.

■ Initial set-up

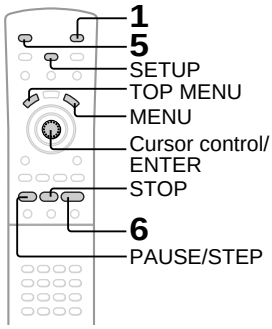
Make the following settings on the display.

On-Screen Language: Select the appropriate on-screen language.
TV Shape: Select a picture size according to the aspect ratio of your TV. (See 38 for details.)


TOSHIBA
Thank you for your purchase of this TOSHIBA DVD Player.
Please make a selection
for On-Screen Language and your TV shape and
press ENTER button on your remote control.
FIRST SETUP
On-Screen Language ENG
TV Shape 4:3LB

1 Move the cursor control (▲ / ▼) to select "On-Screen Language," and press **ENTER**.
2 Select a language moving the cursor control (▲ / ▼), and press **ENTER**.
3 Move the cursor control (▼) to select "TV Shape," and press **ENTER**.
4 Select a picture size moving the cursor control (▲ / ▼), and press **ENTER**.
5 Finally press **SETUP**.

All your selections are entered and the display disappears.
To change your settings, see "Customizing the Function Settings." 35



■ To obtain a higher quality picture

Occasionally, some picture noise not usually visible during a normal broadcast may appear on the TV screen while playing a DVD video disc because the high resolution pictures on these discs include a lot of information. While the amount of noise depends on the TV you use with this DVD video player, you should generally reduce the sharpness adjustment on your TV when viewing DVD video discs.

■ About DVD VCD CD

The DVD VCD CD icons on the heading bar show the playable discs for the function described under that heading.

DVD : You can use this function with DVD video discs.
VCD : You can use this function with VIDEO CDs.
CD : You can use this function with audio CDs.

■ To pause playback (still mode)

Press **PAUSE/STEP** during playback.

To resume normal playback, press the PLAY button.

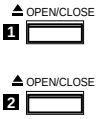
- The sound is muted during still mode.

■ To stop playback

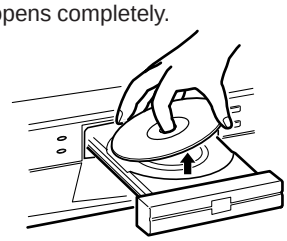
Press **STOP**.

■ To remove the disc

Press **OPEN/CLOSE (1/2)** for the disc you want to remove.



Remove the disc after the disc tray opens completely.



Be sure to press the OPEN/CLOSE (1/2) button to close the disc tray after you remove the disc.

■ About the screen saver

If you pause a picture of a DVD video disc and leave it still for a long while, the screen saver of the DVD video player automatically appears (when “Screen Saver” is set to “On” 41). To turn off the screen saver, press the PLAY button.

■ Automatic Power Off function

If the DVD video player is stopped, or the screen saver is engaged for about 20 minutes, the DVD video player will automatically turn itself off.

■ HDCD (High Definition Compatible Digital®)

HDCD® (High Definition Compatible Digital®) is a recording system that has improved audio CD sound in dynamic range, sound field reproducibility and vocal acoustics.
This DVD video player is equipped with an HDCD decoder. The HDCD indicator illuminates when playing an HDCD-encoded audio CD.

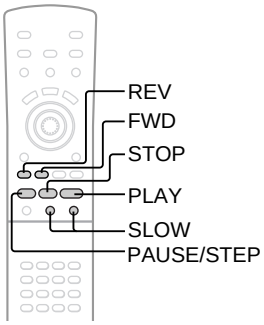
HDCD®, High Definition Compatible Digital® and Pacific Microsonics™ are either registered trademarks or trademarks of Pacific Microsonics, Inc. in the United States and/or other countries. HDCD system manufactured under license from Pacific Microsonics, Inc. This product is covered by one or more of the following patents: United States: 5,479,168, 5,638,074, 5,640,161, 5,808,574, 5,838,274, 5,854,600, 5,872,531 and 5,864,311. Australia 669114. Other patents pending.

Notes

- Do not move the DVD video player during playback. Doing so may damage the disc.
- Use the OPEN/CLOSE (1/2) button to open and close the disc tray. Do not push the disc tray while it is moving. Doing so may cause the DVD video player to malfunction.
- Do not push up on the disc tray or put any objects other than discs on the disc tray. Doing so may cause the DVD video player to malfunction.
- In many instances, a menu screen will appear after playback of a movie is completed. Prolonged display of an on-screen menu may damage your television set, permanently etching that image onto its screen. To avoid this, be sure to press the STOP button on your remote control once the movie is completed.

Playing a Disc (continued)

You can play discs at various speeds, and resume playback from the location where you stopped playback.



DVD VCD CD Playing fast in reverse or forward direction

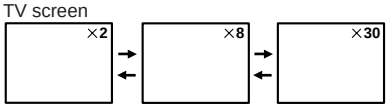
Press REV or FWD during playback.

REV FWD

REV : Fast reverse playback
FWD: Fast forward playback

DVD Each time you press the REV or FWD button, the playback speed changes.

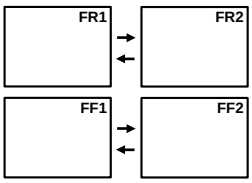
TV screen



x2 the normal speed | x8 the normal speed | x30 the normal speed

VCD CD Each time you press the REV or FWD button, the two speeds alternate.

TV screen



Fast reverse playback

Fast forward playback

■ To resume normal playback

Press **PLAY**.

PLAY

Notes

- The DVD video player does not play sound and subtitles during reverse and forward scan of DVD video discs. However, the DVD video player plays sound during fast forward or fast reverse play of audio CDs.
- The playback speed may differ depending on the disc.

DVD VCD Playing frame by frame

Press PAUSE/STEP during still playback.

PAUSE/STEP

Each time you press the PAUSE/STEP button, the picture advances one frame.

■ To resume normal playback

Press **PLAY**.

PLAY

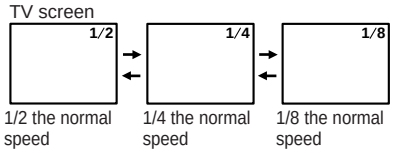
Note

The sound is muted during frame by frame playback.

DVD VCD Playing in slow-motion

Press SLOW during playback.

SLOW ◄I I► Each time you press the SLOW I► button, the slow-motion speed changes.



SLOW ◄I If you press the SLOW ◄I button during playback, you can view the picture in reverse slow-motion. (Only when using a DVD video disc.)

Each time you press the SLOW ◄I button, the slow-motion speed changes.

■ To resume normal playback

Press **PLAY**.

PLAY

Notes

- The sound is muted during slow-motion playback.
- The playback speed may differ depending on the disc.

DVD VCD CD Resuming playback from the same location

1 Press STOP at the location where you want to interrupt playback.

STOP The DVD video player memorizes the location where playback is stopped.

2 Press PLAY.

PLAY The DVD video player resumes playback from the location where you stopped playback.

■ To start playback from the beginning regardless of the location where you stopped playback

1 Press **STOP** twice.

STOP The DVD video player's memory is cleared.

2 Press **PLAY**.

PLAY

DVD Playback starts from the beginning of the current title.

VCD CD Playback starts from the beginning of the disc.

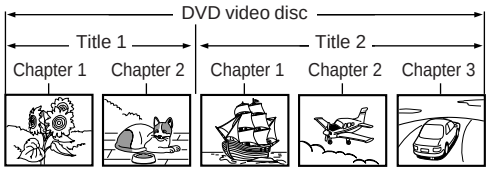
- If you want to return to the beginning of a DVD video disc, open and close the disc tray once with the OPEN/CLOSE (1/2) button for the disc you want to play before pressing the PLAY button.

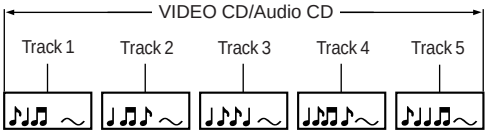
Notes

- The DVD video player's memory is also cleared when:
  - you unplug the DVD video player from the wall outlet after you stop playback.
  - you change the parental lock setting 〈41〉 or select a disc menu language 〈37〉.
  - you open the disc tray for a disc which is played.
  - you switch the discs by pressing the DISC SELECT button.
- There may be a difference in the location where playback resumes depending on the disc.
- Settings you changed using the on-screen displays while the DVD video player keeps a location in the memory may function only after the memory is cleared.

Locating a Specific Title, Chapter, or Track

Normally, DVD video discs are divided into titles, and the titles are sub-divided into chapters. VIDEO CDs and audio CDs are divided into tracks. You can quickly locate any specific title, chapter, or track.



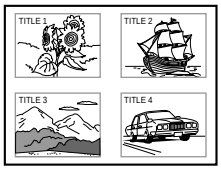


DVD Locating a title using the top menu

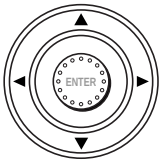
1 Press TOP MENU.

The top menu appears on the TV screen.

e.g.



2 Select the title you want moving the cursor control (▲ / ▼ / ◄ / ►).



If the titles in the top menu are assigned a number, you can directly locate a specific title by pressing its designated number with the number buttons.

3 Press ENTER.

Playback starts from chapter 1 of the selected title.

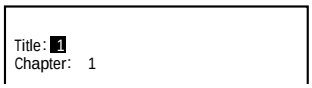
Notes

- The instructions above describe basic procedures which may vary depending on the contents of the DVD video disc. If different instructions appear on the TV screen, follow those instructions.
- If you display the top menu during playback and press the TOP MENU button again without selecting any title, the DVD video player may resume playback from the point where you first pressed the TOP MENU button (depending on the actual DVD video disc.)
- This method of locating a title is available only on a disc that contains a top menu.
- Instruction notes of discs may refer to the button that displays the top menu as TITLE button.

DVD Locating a title by entering the title number

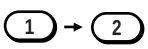
1 Press T.

Make sure that the space next to “Title” is highlighted.
(You can shift the highlight moving the cursor control (▲ / ▼).)



2 Press the corresponding number buttons for the title you want.

e.g. To select title 2

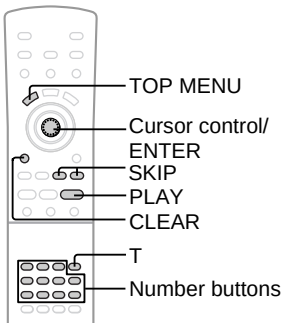
To select title 12 

3 Press PLAY.

Playback starts from chapter 1 of the selected title.

Notes

- Pressing the CLEAR button resets the title and chapter numbers. To clear the “Title” and “Chapter” display, press the T button several times.
- This method of locating a title is available only on a disc that contains title numbers.



Locating a specific chapter or track directly

1 Press T.

Skip steps 1 and 2 if you are using a VIDEO CD/ audio CD.

T

Title: 1
Chapter: 1

2 Move the cursor control (▼) to highlight the space next to "Chapter."

ENTER

Title: 1
Chapter: 1

3 Press the corresponding number buttons for the chapter or track you want.

You can use the +10 button to select numbers from 10 through 99.

e.g. To select chapter or track 25

2 → 5

or +10 → +10 → 5

4 Press PLAY.

PLAY

Playback starts from the selected chapter or track.

■ To select a title and chapter number at the same time

Move the cursor control (▲ / ▼) to highlight the space next to "Title", and enter the title number using the number buttons.

Note

Pressing the CLEAR button resets the title and chapter numbers. To clear the "Title" and "Chapter" display, press the T button several times.

Locating a specific chapter or track

Press SKIP ⏮ or ⏭ repeatedly to display the chapter or track number you want.

Playback starts from the selected chapter or track.

SKIP ⏭ To locate succeeding chapters or tracks

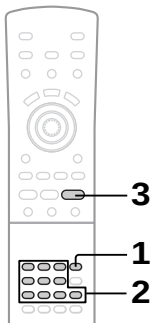
SKIP ⏮ Playback starts from the beginning of the current chapter or track.
When you press twice, playback starts from the beginning of the preceding chapter or track.

Notes

- Some titles may not display chapter numbers.
- When you set "Title Stop" to "Off" 42, you can access chapters in another title. If you go back to the preceding title by pressing the SKIP ⏮ button, the DVD video player locates the first chapter of the title. When "Title Stop" is set to "On," you can access chapters only within the current title.

Locating a Specific Location Directly

You can locate a specific location by entering its corresponding time (hours, minutes, seconds).



DVD VCD CD Entering the time of the desired location

1 Press T twice.

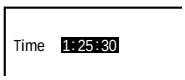
T

You may have to press further depending on the disc. Press the button repeatedly until the following display appears.

2 Press the number buttons to enter the time.

e.g.

1 → 2 → 5 → 3 → 0



3 Press PLAY.

PLAY

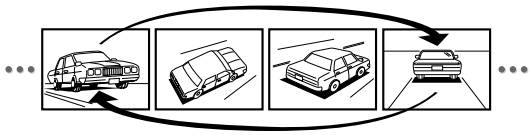
Playback starts from the desired location.

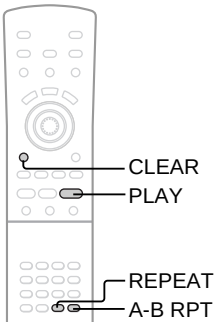
Notes

- Some discs may not respond to this process.
- Some scenes may not be located precisely as you specified.
- This method for accessing specific locations is available only within the current title of the DVD video disc or within the current track of the VIDEO CD/audio CD.

Playing Repeatedly

You can play a specific title, chapter, track, or segment repeatedly.



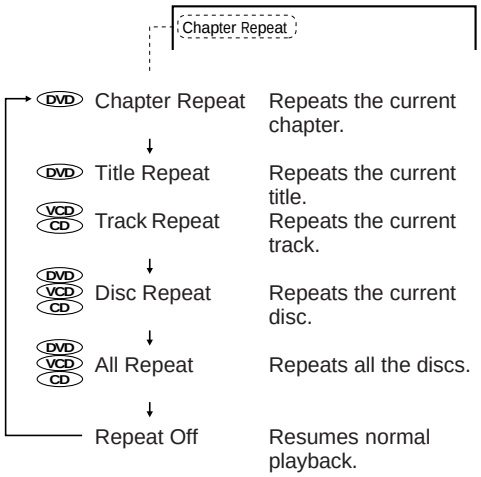


DVD VCD CD Repeating a title, chapter, or track

1 Press REPEAT.

REPEAT

Each time you press the REPEAT button, the repeat mode changes as follows.



2 Press PLAY.

PLAY

The DVD video player starts repeat playback.
Press the PLAY button within about 5 seconds after you press the REPEAT button.

■ To resume normal playback

Press **CLEAR**.

CLEAR

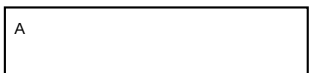
Notes

- Some discs may not permit repeat operation.
- When using a DVD video disc, “All Repeat” may be canceled when the DVD video player switches the discs.

DVD VCD CD Repeating a specific segment

1 Press A-B RPT at the beginning of the segment (point A) you want to play repeatedly.

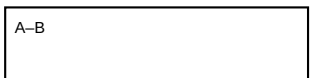
A-B RPT



2 Press A-B RPT again at the end of the segment (point B).

A-B RPT

The DVD video player automatically returns to point A and starts repeat playback of the selected segment (A-B).



■ To resume normal playback

Press **CLEAR**.

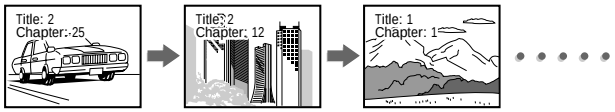
CLEAR

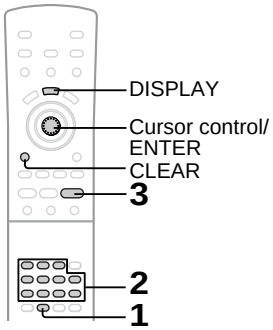
Notes

- Some discs may not permit A-B repeat operation.
- You cannot set the A-B repeat function for a segment that includes multiple camera angles 〈31〉.
- You can specify a segment only within the current title or track.
- There may be a slight difference between point A and the location where playback actually resumes depending on the disc.

Playing in a Favorite Order

You can combine your favorite titles, chapters, or tracks and play them in the order you determine. You can program up to 28 selections into the memory. (Memory playback)



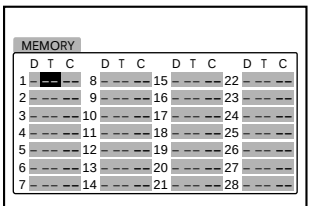


DVD VCD CD Setting titles, chapters, or tracks in a favorite order

1 Insert a disc and press MEMORY during stop.

MEMORY

The following display appears.



D: Disc number
T: Title number or track number
C: Chapter number

2 Select the items in the order you want by pressing the number buttons, then ENTER for each item.

Each time you move the cursor control (◄ / ►), the spaces of “D”, “T” and “C” are highlighted in turn. Highlight where you want to enter, then press the corresponding number buttons.

To select tracks from a VIDEO CD/audio CD in order, press the **number buttons** for the track, then press the **ENTER** button for each selection you want.

To select another title, chapter or track in the same disc, you do not need to select the disc number.

To select another chapter in the same title, you do not need to select the title number.

3 Press PLAY while the MEMORY display appears on the TV screen.

PLAY

The DVD video player starts memory playback.

■ To change the programmed selections

1 While the MEMORY display appears on the TV screen, move the cursor control (▲ / ▼) to highlight the item you want to change.
2 Change the selection following the instructions in step **2**.

■ To cancel the programmed selections

1 While the MEMORY display appears on the TV screen, move the cursor control (▲ / ▼) to highlight the item you want to cancel.
2 Press **CLEAR**.

■ To resume normal playback from memory playback

Press **CLEAR**.

CLEAR

The memory playback indicator disappears.

■ To program during playback

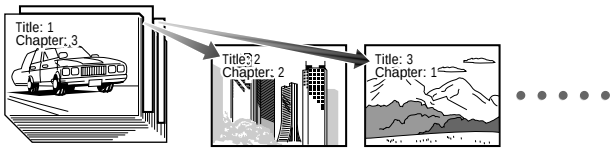
If you press the **MEMORY** button during playback, a programming display appears.
If you further press the **DISPLAY** button, you can display the current MEMORY setting. Follow steps **2** and **3**.

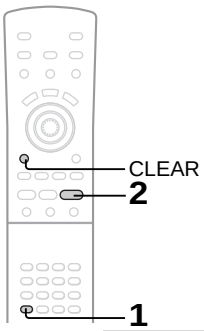
Notes

- Some discs may not permit memory playback operation.
- If you press the REPEAT button during memory playback, the DVD video player repeats the current memory playback.
- If you press the MEMORY or RETURN button while the MEMORY display appears on the TV screen, the MEMORY display disappears.
- The programmed selections will be cleared when you turn off the DVD video player.
- When using a DVD video disc, the memory playback may be canceled when the DVD video player switches the discs.

Playing in Random Order

You can play titles, chapters within a title, or tracks in random order. (Random playback)





DVD VCD CD Playing titles, chapters or tracks in random order

1 Press RANDOM.

RANDOM

Each time you press the RANDOM button, the random playback mode changes as follows.

- DVD Chapter Random — Plays the chapters within the current title in random order.
- ↓
- DVD Title Random — Plays the titles within the current disc in random order.
- VCD CD Track Random — Plays the tracks within the current disc in random order.
- ↓
- Random Off — Resumes normal playback.

If you press the RANDOM button during playback, the DVD video player automatically starts random playback after finishing the current title, chapter or track.

2 Press PLAY.

PLAY

The DVD video player starts random playback.
Press the PLAY button within about 5 seconds after you press the RANDOM button.

■ To resume normal playback

Press **CLEAR**.

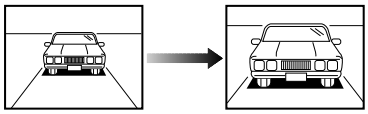
CLEAR

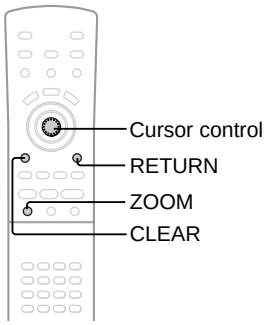
Notes

- Some discs may not permit random playback operation.
- You cannot use the random playback function in conjunction with the memory playback function.

Zooming a Picture

You can magnify areas within a picture.





DVD Zooming a picture

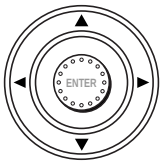
Press ZOOM during normal, slow or still playback.

ZOOM

As you repeatedly press the ZOOM button, the magnification level increases.

RETURN

To reduce the magnification level, press the RETURN button.



As you move the cursor control (▲ / ▼ / ◄ / ►), the zoom point shifts. When the zoom point reaches an edge of the picture, the color of "Zoom" changes.

CLEAR

Pressing the CLEAR button restores the zoom point to the center of the picture.

■ To resume normal playback

Press **ZOOM** repeatedly so that "Zoom Off" appears.

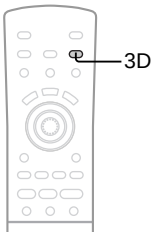
ZOOM

Notes

- Some discs may not respond to zoom feature.
- During some scenes, the buttons may not work as described in the left column.
- Zooming does not work on subtitles or menus included on DVD video discs.
- During zoom playback, the cursor control (▲ / ▼ / ◄ / ►) cannot work on menus included on the DVD video discs. If you want to view the menus, cancel the zoom playback.
- The magnification level varies depending on the picture size you select. 38

Selecting 3-D (N-2-2) Sound Enhancement

You can enjoy expansive virtual surround sound effects from just two speakers.



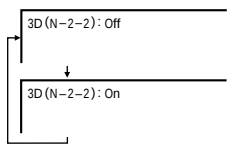
DVD VCD CD Selecting 3-D (N-2-2) sound enhancement

Press 3D during playback.

3D

The current setting is displayed.

Each time you press the 3D button, the setting changes as follows.



Off

On

Notes

- You may sense a difference in volume between normal and 3-D (N-2-2) enhanced sound.
- 3-D (N-2-2) sound enhancement may not function (or may not be realized) depending on the sound output setting or disc recording system 33.
- If 3-D (N-2-2) sound enhancement is on, Dolby Pro Logic Surround may not function on output sounds at all, or may function differently than usual.

Spatializer® 3-Dimensional Sound Processing provided by Desper Products. Inc.
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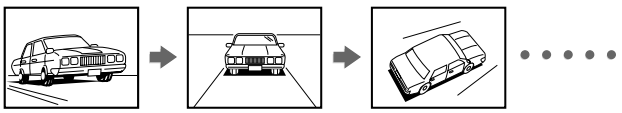
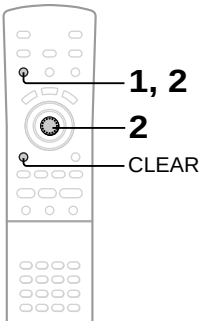
Selecting the Camera Angle

If the scene was recorded from multiple angles, you can easily change the camera angle of the scene you are watching.

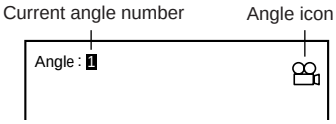




DVD Changing the camera angle

1 Press ANGLE while playing a scene recorded with multiple angles.

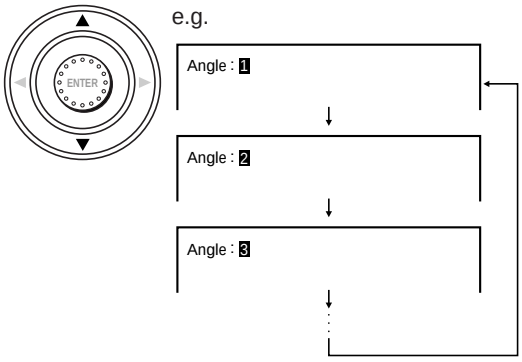
While playing a scene recorded with multiple angles, the angle icon (🎥) appears in the DVD display and on the TV screen.
Press the ANGLE button while the angle icon is displayed.



2 Press ANGLE or move the cursor control (▲) while the angle number is displayed on the TV screen.

Each time you press the ANGLE button or move the cursor control (▲), the camera angle changes.

e.g.



▼ : Cycles backwards

You can change the camera angle directly by pressing the number buttons corresponding to its angle number instead of moving the cursor control (▲ / ▼).

■ To turn off the angle number display

Press **CLEAR**.

■ To disable the angle icon display on the TV

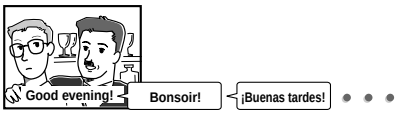
From the on-screen displays, set “On-Screen Displays” to “Off.” 41
Monitor the DVD display when you want to change the camera angle.

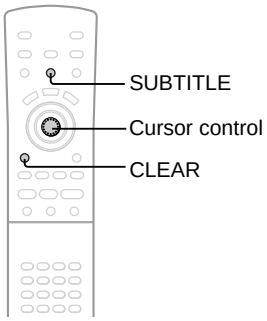
Notes

- You can change the camera angle during still playback. The camera angle changes to the new setting when you resume normal playback.
- If you pause a picture immediately after changing a camera angle, the resumed playback picture may not display the new camera angle.

Selecting Subtitles

You can display subtitles on the TV screen and select a subtitle language from those included on the DVD video disc.



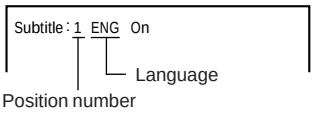


DVD Selecting a subtitle language

1 Press SUBTITLE during playback.

SUBTITLE

The current subtitle setting is displayed for about 3 seconds.

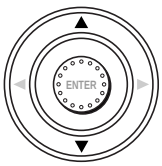


The abbreviation of the language appears instead of the language name. Refer to the list of languages and their abbreviations. 43

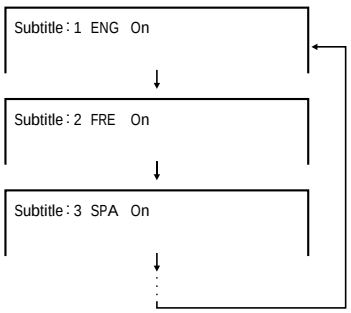
2 Press SUBTITLE or move the cursor control (▲) while the subtitle setting is displayed on the TV screen.

SUBTITLE

Each time you press the SUBTITLE button or move the cursor control (▲), the subtitle languages included on the DVD video disc change.



e.g.



▼ : Cycles backwards

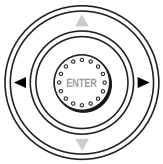
To turn off the subtitle setting display, press the CLEAR button.

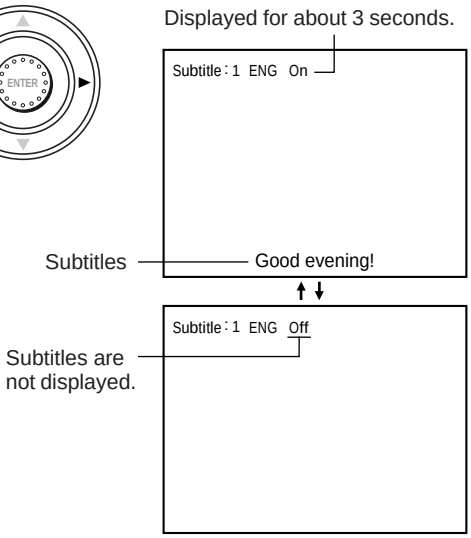
■ To turn subtitles on or off

1 Press **SUBTITLE** during playback.

SUBTITLE

2 Move the cursor control (◄ / ►) while the subtitle setting is displayed on the TV screen, to select “On” or “Off.”





Notes

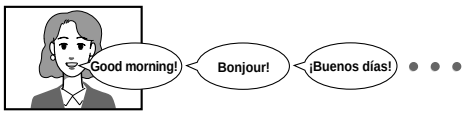
- Some DVD video discs are set to display subtitles automatically, and you cannot turn them off even if you set the subtitle function to off.
- During some scenes, the subtitles may not appear immediately after you select “On.”
- Some DVD video discs will allow you to make subtitle selections and turn subtitles on or off only via the disc menu.

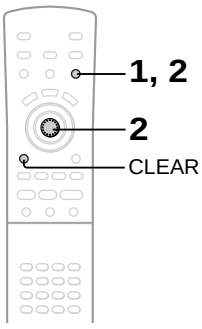
Notes

- When you turn on the DVD video player or replace a disc, the player returns to the initial default setting 37. When you select a subtitle language which is not included on the disc, the DVD video player plays a prior language programmed on the disc.
- During some scenes, the subtitles may not appear immediately after you change the subtitle language by moving the cursor control (▲ / ▼).

Selecting a Language

You can select a preferred language and sound recording system from those included on the DVD video disc.



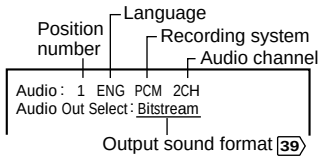


DVD Selecting a playback audio setting

1 Press AUDIO during playback.

AUDIO

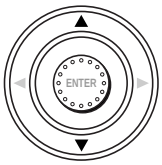
The current audio setting is displayed for about 3 seconds.



The abbreviation of the language appears instead of the language name. Refer to the list of languages and their abbreviations. 43

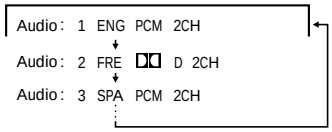
2 Press AUDIO or move the cursor control (▲) while the audio setting is displayed on the TV screen.

AUDIO



Each time you press the AUDIO button or move the cursor control (▲), the audio settings included on the DVD video disc change.

e.g.



▼: Cycles backwards

If you move the cursor control (◄ / ►), you can select output sound format. 39

To turn off the audio setting display, press the CLEAR button.

Selecting sound channels of VIDEO CDs

You can switch left and right channels by pressing the **AUDIO** button repeatedly during playback.

Notes

- When you turn on the DVD video player or replace a disc, player returns to the initial default setting 37.
  When you select a sound track which is not included on the disc, the DVD video player plays a prior sound track programmed on the disc.
- Some discs allow you to change audio selections only via the disc menu. If this is the case, press the MENU button and choose the appropriate language from the selections on the disc menu.

Output sound conversion table (sampling frequency/quantization bit)

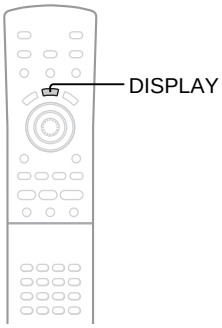
Discs	Sound recording system		Audio selection from the menu 35 39 and output jacks on the rear panel							
			"Bitstream"		"Analog 6ch"		"Analog 2ch"		"PCM"	
			BITSTREAM/PCM jack	2CH AUDIO OUT jacks	BITSTREAM/PCM jack	5.1CH SURROUND AUDIO OUT jacks	BITSTREAM/PCM jack	2CH AUDIO OUT jacks	BITSTREAM/PCM jack	2CH AUDIO OUT jacks
DVD video discs	Dolby Digital		Bitstream	48 kHz/20 bit	–	48 kHz/16 bit	Bitstream	48 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit
	Linear PCM	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	–	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit
		48 kHz/20 bit	48 kHz/16 bit	48 kHz/16 bit	–	48 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit
		48 kHz/24 bit	48 kHz/16 bit	48 kHz/20 bit	–	48 kHz/20 bit	–	48 kHz/24 bit	48 kHz/16 bit	48 kHz/20 bit
		96 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	–	96 kHz/16 bit	–	96 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit
		96 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit	–	96 kHz/20 bit	–	96 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit
		96 kHz/24 bit	48 kHz/16 bit	48 kHz/20 bit	–	96 kHz/20 bit	–	96 kHz/24 bit	48 kHz/16 bit	48 kHz/20 bit
	DTS		Bitstream	–	Bitstream	–	Bitstream	–	–	–
	MPEG2		Bitstream (7.1ch)	–	–	48 kHz/16 bit	Bitstream (2ch)	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit
VIDEO CDs	MPEG1		44.1 kHz/16 bit	44.1 kHz/16 bit	–	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit
Audio CDs	Linear PCM 44.1 kHz/16 bit		44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit
	HDCD		44.1 kHz/16 bit	44.1 kHz/20 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/20 bit	44.1 kHz/16 bit	44.1 kHz/20 bit
	DTS		Bitstream	(Noise)	Bitstream	(Noise)	Bitstream	(Noise)	Bitstream	(Noise)

: 3-D (N-2-2) sound enhancement can function.

- HDCD sound via the 2CH AUDIO OUT jacks and the 5.1CH SURROUND AUDIO OUT jacks is output in a normal audio CD format when 3-D (N-2-2) sound enhancement is on or when "Analog 6ch" is selected.

Viewing the Operational Information and DVD/CD-Text

You can view information about a disc and its operational status on the TV screen.

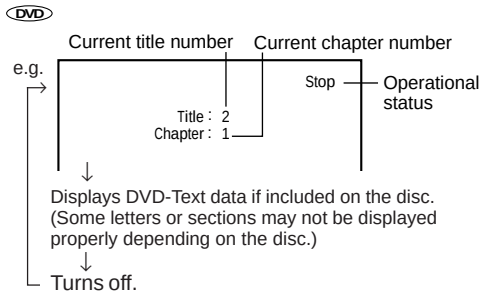


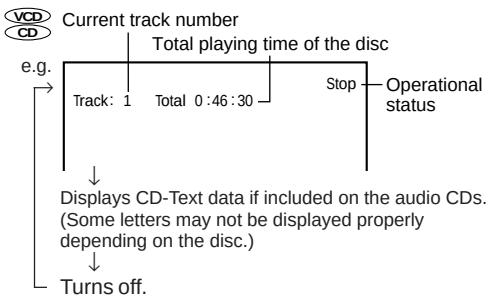
DVD VCD CD Checking the operational status

Press DISPLAY during stop.

DISPLAY

Each time you press the DISPLAY button, the on-screen display changes as follows.



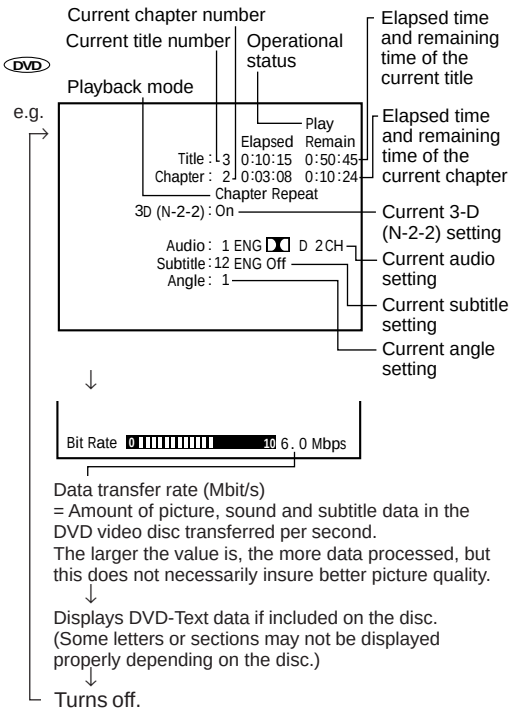


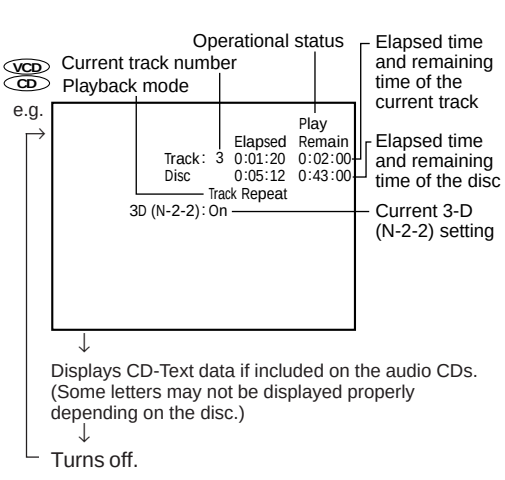
DVD VCD CD Checking the remaining time and setting status

Press DISPLAY during playback.

DISPLAY

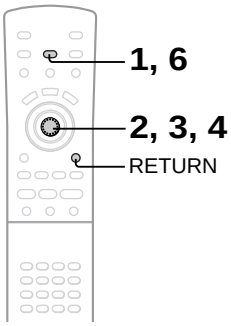
Each time you press the DISPLAY button, the on-screen display changes as follows.


DVD
Current chapter number
Current title number
Operational status
Playback mode
e.g.
Elapsed time and remaining time of the current title
Elapsed time and remaining time of the current chapter
Play
Elapsed Remain
Title : 3 0:10:15 0:50:45
Chapter : 2 0:03:08 0:10:24
Chapter Repeat
3D (N-2-2) : On
Current 3-D (N-2-2) setting
Audio : 1 ENG D 2CH
Subtitle : 12 ENG Off
Angle : 1
Current audio setting
Current subtitle setting
Current angle setting
Bit Rate 0 10 6.0 Mbps
Data transfer rate (Mbit/s)
= Amount of picture, sound and subtitle data in the DVD video disc transferred per second.
The larger the value is, the more data processed, but this does not necessarily insure better picture quality.
Displays DVD-Text data if included on the disc.
(Some letters or sections may not be displayed properly depending on the disc.)
Turns off.


VCD CD
Operational status
Current track number
Playback mode
e.g.
Elapsed time and remaining time of the current track
Elapsed time and remaining time of the disc
Play
Elapsed Remain
Track: 3 0:01:20 0:02:00
Disc 0:05:12 0:43:00
Track Repeat
3D (N-2-2) : On
Current 3-D (N-2-2) setting
Displays CD-Text data if included on the audio CDs.
(Some letters may not be displayed properly depending on the disc.)
Turns off.

Customizing the Function Settings

You can change the default settings to customize performance to your preference.



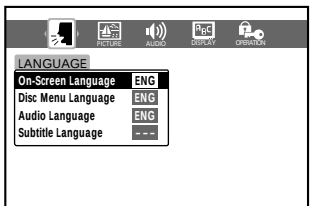
Setting procedure

DVD VCD CD

1 Press SETUP during stop.

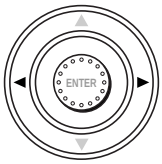
SETUP

The following on-screen display appears.



2 Move the cursor control (◄ / ►) to select a symbol for the setting you want to change.

(See the next page.)



Language settings

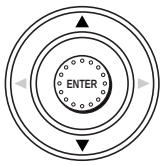
Picture performance settings

Output sound settings

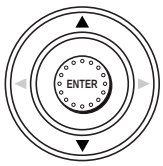
Display settings

Operational settings

3 Move the cursor control (▲ / ▼) to select the setting you want to change, then press ENTER.



4 Change the selection by the cursor control (▲ / ▼) or other buttons, referring to the pages from 37, then press ENTER.



5 Repeat steps 3 and 4 to change other settings.

To select another symbol, go back to step 2.

6 Press SETUP.

SETUP

The on-screen display disappears.

■ To return to the previous display

Press **RETURN**.

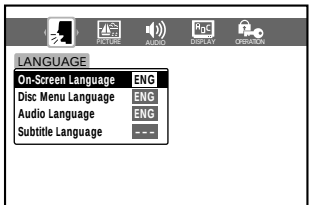
RETURN

Notes

- The on-screen display disappears when you press the SETUP button.
- The SETUP button can function even during normal playback, however some operations may be inaccessible, and a message will appear. In this case, try again after playback is stopped.

	Setting		Details	Page
LANGUAGE	On-Screen Language	DVD VCD CD	To select a preferred language for on-screen displays.	37
	Disc Menu Language	DVD	To select a preferred language for disc menus.	37
	Audio Language	DVD	To select a preferred language for the sound track.	37
	Subtitle Language	DVD	To select a preferred language for subtitles.	37
PICTURE	TV Shape	DVD	To select a picture size according to the aspect ratio of your TV.	38
	Black Level	DVD VCD	To select the black level of playback pictures.	38
AUDIO	Audio Out Select	DVD VCD CD	To select an output sound format corresponding to your system connection.	39
	Dynamic Range Control	DVD	To turn on or off a function that makes faint sounds easier to hear even if you lower the volume during late hours playback.	40
	Karaoke Vocal	DVD	To turn on or off the vocal output during DVD KARAOKE disc playback.	40
	CD Attenuation	CD	To attenuate sound distortion during playback of an audio CD.	40
DISPLAY	On-Screen Displays	DVD VCD CD	To turn on or off the operational status display on the TV screen.	41
	OSD Background Color	DVD VCD CD	To select the background color for on-screen displays.	41
	Screen Saver	DVD	To turn on or off the screen saver.	41
OPERATION	Pause/Still	DVD	To select the resolution of still pictures. (Field/Frame)	41
	Parental Lock	DVD	To turn on or off the parental lock function.	41
	Remote Confirmation	DVD VCD CD	To turn on or off the confirmation beeper for each remote command received.	42
	Title Stop	DVD	To turn on or off a feature that automatically stops playback after a title has been viewed.	42
	PBC	VCD	To use the menu screen when playing a PBC-controllable VIDEO CD.	42

Setting details



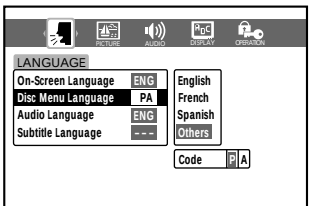
On-Screen Language (DVD) (VCD) (CD)

English: To view on-screen displays in English.
French: To view on-screen displays in French.
Spanish: To view on-screen displays in Spanish.

Disc Menu Language (DVD)

English: To display disc menus in English.
French: To display disc menus in French.
Spanish To display disc menus in Spanish.
Others: To make a further choice.
After pressing the ENTER button, follow steps 1) - 4) below.

1) Obtain the abbreviation of the preferred language from the list 43.
2) Select the first character by moving the cursor control (▲ / ▼).
3) Move the cursor control (◄ / ►) to shift and select the second character by moving the cursor control (▲ / ▼).



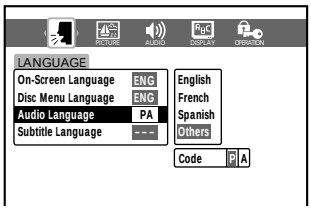
4) Press the ENTER button.

Note
Some DVD video discs may not include your pre-selected language. In this case, the DVD video player automatically displays disc menus consistent with the disc's initial language setting.

Audio Language (DVD)

English: To play sound tracks in English.
French: To play sound tracks in French.
Spanish: To play sound tracks in Spanish.
Others: To make a further choice.
After pressing the ENTER button, follow steps 1) - 4) below.

1) Obtain the abbreviation of the preferred language from the list 43.
2) Select the first character by moving the cursor control (▲ / ▼).
3) Move the cursor control (◄ / ►) to shift and select the second character by moving the cursor control (▲ / ▼).



4) Press the ENTER button.

Note
Some DVD video discs may be played in a different language than you selected. A prior language may be programmed on the disc.

Subtitle Language (DVD)

English: To display subtitles in English.
French: To display subtitles in French.
Spanish: To display subtitles in Spanish.
No Subtitle: To disable subtitles.
Others: To make a further choice.
After pressing the ENTER button, follow steps 1) - 4) below.

1) Obtain the abbreviation of the preferred language from the list 43.
2) Select the first character by moving the cursor control (▲ / ▼).

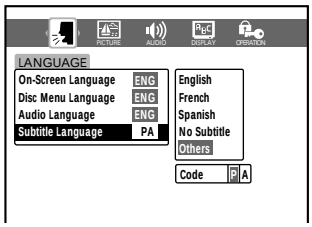
(Continued)

Customizing the Function Settings (continued)

Setting details

(Continued)

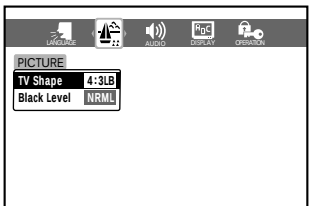
3) Move the cursor control (◄ / ►) to shift and select the second character by moving the cursor control (▲ / ▼).



4) Press the ENTER button.

Notes

- Some DVD video discs may be set to display subtitles in a different language than you selected. A prior subtitle language may be programmed on the disc.
- Some DVD video discs allow you to change subtitle selections only via the disc menu. If this is the case, press the MENU button and choose the appropriate subtitle language from the selection on the disc menu.



TV Shape DVD

4:3 LetterBox: Select when a standard 4:3 TV is connected.
Displays theatrical images with masking bars above and below the picture.

4:3 Normal: Select when a standard 4:3 TV is connected.
Displays pictures cropped to fill your TV screen. Either or both sides of the picture are cut off.

16:9 Widescreen: Select when a 16:9 wide TV is connected.

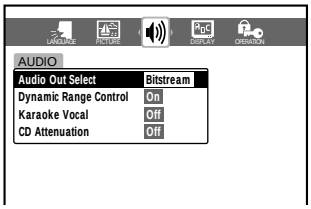
Notes

- The displayable picture size is preset on the DVD video disc. Therefore, the playback picture of some DVD video discs may not conform to the picture size you select.
- When you play DVD video discs recorded in the 4:3 picture size only, the playback picture always appears in the 4:3 picture size regardless of the TV shape setting.
- If you select “16:9 Widescreen” and you own a 4:3 TV set, the DVD playback picture will be horizontally distorted during playback. Images will appear to be horizontally compressed. Always be sure that your TV shape conforms to the actual TV in use.

Black Level DVD VCD

Set to your preference and monitor’s ability.

Enhanced: Expanded black level. (0 IRE)
Normal: Standard black level. (7.5 IRE)



Audio Out Select (DVD) (VCD) (CD)

Select the output sound format corresponding to your system connection.
For details of sound recording systems, see 33.

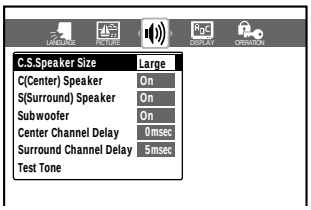
Bitstream: Select when connected to an amplifier equipped with a Dolby Digital, DTS, MPEG1 or MPEG2 decoder. 18 19
The DVD video player outputs digital audio information in the bitstream format when you play a DVD video disc recorded on the Dolby Digital, DTS, MPEG1 or MPEG2 recording system.

Analog 6ch: Select when connected to a Dolby Digital ready amplifier equipped with 5.1ch audio inputs. 18
This DVD video player is equipped with a Dolby Digital decoder.
The next screen will appear for the detailed setting.

Analog 2ch: Select when connected to a TV, or Dolby Pro Logic or stereo system via the analog audio jacks. 16 18

PCM: Select when connected to a 2 channel digital stereo amplifier. 19
The DVD video player outputs sounds in the PCM 2ch format when you play a DVD video disc recorded on the Dolby Digital, MPEG1 or MPEG2 recording system.

When you select "Analog 6Ch":
Make the following settings for the built-in 5.1ch surround decoder.



1) Select an item by moving the cursor control (▲ / ▼), and press the ENTER button.

2) Make the settings (see below) by moving the cursor control (▲ / ▼ / ◄ / ►), and press the ENTER button.

C.S.Speaker Size
Small: When the center speakers or surround speakers cannot reproduce low frequency signals below 120 Hz.
Large: When the center speakers and surround speakers can reproduce low frequency signals below 120 Hz.

C(Center) Speaker
Off: When center speakers are not connected.
On: When you connect center speakers.

S(Surround) Speaker
Off: When surround speakers are not connected.
On: When you connect surround speakers.

Subwoofer
Off: When a sub woofer is not connected.
On: When you connect a sub woofer.

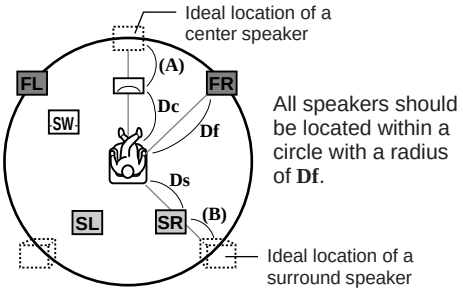
(Continued)

Customizing the Function Settings (continued)

Setting details

(Continued)

Adjusting the delay time:
When enjoying 5.1ch surround playback, it is ideal to choose a listening position that is the same distance from each speaker. By adjusting the delay time of the center/surround speakers, you can virtually create an ideal listening environment (as if the center/surround speakers were at their ideal locations respectively as below.)



All speakers should be located within a circle with a radius of **Df**.

Center Channel Delay
0msec: When **Df** equals **Dc**.
1msec: When **(A)** is approx. 34 cm (13 inch)
2msec: When **(A)** is approx. 68 cm (27 inch)
3msec: When **(A)** is approx. 102 cm (40 inch) . . .
*(A) = Df – Dc
Get your optimum value (0, 1, 2 . . . 5) dividing **(A)** by 34.

Surround Channel Delay
0msec: When **Df** equals **Ds**.
1msec: When **(B)** is approx. 34 cm (13 inch)
2msec: When **(B)** is approx. 68 cm (27 inch)
3msec: When **(B)** is approx. 102 cm (40 inch) . . .
*(B) = Df – Ds
Get your optimum value (0, 1, 2 . . . 15) dividing **(B)** by 34.

3) Select “Test Tone” and press the ENTER button.
The DVD video player outputs a test signal to each speaker when it is in stop mode. When playing a DVD video disc, it substitutes the current sound for the test signal.
Move the cursor control (◄ / ►) to switch the receiving speakers, and adjust the volume of each speaker at the same level by moving the cursor control (▲ / ▼).
If all the volume levels cannot be equalized, adjust them on the amplifier.

Note
Depending on the disc, 6 channel sounds may not be output via the 5.1 CH SURROUND AUDIO OUT jacks.

Dynamic Range Control DVD

Off: Full dynamic range is maintained.
On: Dynamic range is reduced.

Notes
- This function works only during playback of Dolby Digital recorded discs.
- The level of Dynamic Range Reduction may differ depending on the DVD video disc.

Karaoke Vocal DVD

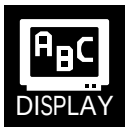
Off: The primary vocal is not output.
On: The primary vocal is output when it is recorded on the disc.

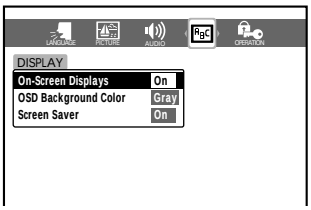
Notes
- The vocal output feature is used during playback of Dolby Digital (multi-channel) recorded DVD KARAOKE discs. This feature allows you to turn off vocal audio tracks, or restore them for background accompaniment.
- When playing KARAOKE, connect appropriate audio equipment such as an amplifier to the DVD video player.

CD Attenuation CD

HDCD enhances the output sound level of audio CD by approximately 6 dB. As such, distortion may occur in some connected products that are unable to compensate for a wide range of input signal levels. (e.g. TV, stereo receivers)

Off: For normal use.
On: Select when an audio CD sound is distorted. Sound volume of an audio CD is lessened.





On-Screen Displays (DVD) (VCD) (CD)

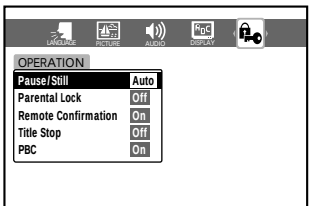
Off: Operational modes (e.g. “Play”, “ ”) are not displayed.
On: Operational modes (e.g. “Play”, “ ”) are displayed on-screen.

OSD Background Color (DVD) (VCD) (CD)

Blue: Blue background.
Gray: Gray background.

Screen Saver (DVD)

Off: The screen saver does not work.
On: The screen saver works.



Pause/Still (DVD)

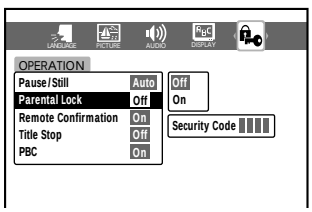
Auto: For normal use. Still and fast motion images can be paused.
Frame: The resolution of still pictures is improved, so that you can make a motionless picture more clearer when you pause it.

Parental Lock (DVD)

DVD video discs equipped with the parental lock function are rated according to their content. The contents allowed by a parental lock level and the way a DVD video disc can be controlled may vary from disc to disc. For example, if the disc allowed you could edit out violent scenes unsuitable for children and replace them with more suitable scenes, or lock out playback of the disc altogether.

- DVD video discs may or may not respond to the parental lock settings. This is not a defect in the DVD video player. Make sure this function works with your DVD video discs.

Off: The parental lock feature does not function. After pressing the ENTER button, follow step 1) below.
On: To activate the parental lock feature or change the settings.
After pressing the ENTER button, follow steps 1) - 3) below.



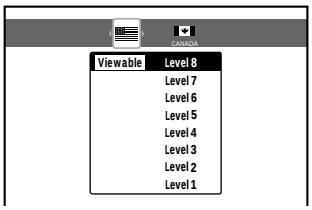
(Continued)

Customizing the Function Settings (continued)

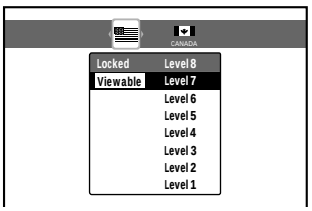
Setting details

(Continued)

1) Press the number buttons to create a personal 4-digit security code, then press the ENTER button.
   If you make a mistake before pressing the ENTER button, press the CLEAR button and enter your 4-digit security code again.
2) Move the cursor control (◄ / ►) to select the country whose standards were used to rate the DVD video disc.



3) Move the cursor control (▲ / ▼) to select the parental lock level, then press the ENTER button.



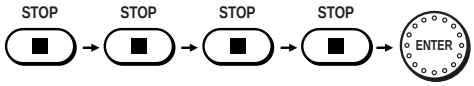
You cannot play DVD video discs rated higher than the level you selected unless you cancel the parental lock function.
For example, when you select level 7, discs rated higher than level 7 are locked out and cannot be played.

The parental lock level is equivalent to the following USA movie ratings.
Level 7: NC-17
Level 6: R
Level 4: PG 13
Level 3: PG
Level 1: G

The parental lock levels for “CANADA” are included for future use. Check the appropriate parental lock level when you buy a DVD video disc equipped with the parental lock feature in the future.

■ **To change the parental lock level**
Follow steps 1) - 3).

■ **To change your 4-digit security code**
1) After selecting “On” or “Off,” press the STOP button four times, then press the ENTER button.



The 4-digit security code is cleared.
2) Press the number buttons to create a new 4-digit security code.
3) Press the ENTER button.

Remote Confirmation DVD VCD CD

Off: The beeper does not sound.
On: The beeper sounds with each remote operation.

Title Stop DVD

Off: The DVD video player continues after playback of a title is completed.
On: The DVD video player stops after playback of a title is completed.

PBC VCD

Off: When playing a VIDEO CD without using the menu.
On: To use the menu when playing a PBC-featured VIDEO CD.

Table of Languages

Table of languages and their abbreviations

Abbreviation	Language
– – –	No alternate language
CHI (ZH)	Chinese
DUT (NL)	Dutch
ENG (EN)	English
FRE (FR)	French
GER (DE)	German
ITA (IT)	Italian
JPN (JA)	Japanese
KOR (KO)	Korean
MAY (MS)	Malay
SPA (ES)	Spanish
AA	Afar
AB	Abkhazian
AF	Afrikaans
AM	Amharic
AR	Arabic
AS	Assamese
AY	Aymara
AZ	Azerbaijani
BA	Bashkir
BE	Belorussian
BG	Bulgarian
BH	Bihari
BI	Bislama
BN	Bengali, Bangla
BO	Tibetan
BR	Breton
CA	Catalan
CO	Corsican
CS	Czech
CY	Welsh
DA	Danish
DZ	Bhutani
EL	Greek
EO	Esperanto
ET	Estonian
EU	Basque
FA	Persian
FI	Finnish
FJ	Fiji
FO	Faroese
FY	Frisian
GA	Irish
GD	Scottish Gaelic
GL	Galician

Abbreviation	Language
GN	Guarani
GU	Gujarati
HA	Hausa
HI	Hindi
HR	Croatian
HU	Hungarian
HY	Armenian
IA	Interlingua
IE	Interlingue
IK	Inupiak
IN	Indonesian
IS	Icelandic
IW	Hebrew
JI	Yiddish
JW	Javanese
KA	Georgian
KK	Kazakh
KL	Greenlandic
KM	Cambodian
KN	Kannada
KS	Kashmiri
KU	Kurdish
KY	Kirghiz
LA	Latin
LN	Lingala
LO	Laotian
LT	Lithuanian
LV	Latvian, Lettish
MG	Malagasy
MI	Maori
MK	Macedonian
ML	Malayalam
MN	Mongolian
MO	Moldavian
MR	Marathi
MT	Maltese
MY	Burmese
NA	Nauru
NE	Nepali
NO	Norwegian
OC	Occitan
OM	(Afan) Oromo
OR	Oriya
PA	Panjabi
PL	Polish
PS	Pashto, Pushto

Abbreviation	Language
PT	Portuguese
QU	Quechua
RM	Rhaeto-Romance
RN	Kirundi
RO	Rumanian
RU	Russian
RW	Kinyarwanda
SA	Sanskrit
SD	Sindhi
SG	Sango
SH	Serbo-Croatian
SI	Singhalese
SK	Slovak
SL	Slovenian
SM	Samoan
SN	Shona
SO	Somali
SQ	Albanian
SR	Serbian
SS	Siswati
ST	Sesotho
SU	Sundanese
SV	Swedish
SW	Swahili
TA	Tamil
TE	Telugu
TG	Tajik
TH	Thai
TI	Tigrinya
TK	Turkmen
TL	Tagalog
TN	Setswana
TO	Tongan
TR	Turkish
TS	Tsonga
TT	Tatar
TW	Twi
UK	Ukrainian
UR	Urdu
UZ	Uzbek
VI	Vietnamese
VO	Volapük
WO	Wolof
XH	Xhosa
YO	Yoruba
ZU	Zulu

Before Calling Service Personnel

Check the following guide for the possible cause of a problem before contacting service.

Symptoms and correction

Symptom	Cause	Correction	Page
No power.	• The power plug is disconnected.	• Connect the power plug securely into the wall outlet.	**16**
The DVD video player turned off by itself.	• The automatic power off function turned the unit off.	• Press the PLAY button.	**21**
No picture.	• The TV is not set to receive DVD signal output.	• Select the appropriate video input mode on the TV so the picture from the DVD video player appears on the TV screen.	**20**
	• The video cable is not connected securely.	• Connect the video cable securely into the appropriate jacks.	**16, 17**
No sound.	• The equipment connected with the audio cable is not set to receive DVD signal output.	• Select the correct input mode of the audio receiver so you can listen to the sound from the DVD video player.	**20**
	• The audio cable is not connected securely.	• Connect the audio cable securely into the appropriate jacks.	**16, 17 18, 19**
	• The audio receiver or TV is turned off.	• Turn on the equipment connected with the audio cable.	**20**
	• The setting of output sound format is incorrect.	• Select the proper audio setting.	**33, 35 39**
The playback picture has occasional distortion.	• The disc is dirty.	• Eject the disc and clean it.	**9**
	• It is in fast forward or fast reverse playback.	• Sometimes a small amount of picture distortion may appear. This is not a malfunction.	**–**
Brightness is unstable or noises are present in the playback pictures.	• The effect of copy protection.	• Connect the DVD video player directly to the TV. Avoid connecting the DVD video player to a VCR or TV/VCR combination.	**16**
The DVD video player does not start playback.	• No disc is inserted.	• Insert a disc.	**20**
	• An unplayable disc is inserted.	• Insert a playable disc. (Check the disc type and color system.)	**10**
	• The disc is placed upside down.	• Place the disc with the playback side down.	**20**
	• The disc is not placed within the guide.	• Place the disc correctly inside the guide on the disc tray.	**20**
	• The disc is dirty.	• Clean the disc.	**9**
	• The parental lock function is set.	• Cancel the parental lock function or change the parental lock level.	**35, 41**
Playback does not follow the course of the disc's program.	• It is in the mode of repeat playback, memory playback, etc.	• These operations may prevent a proper progress of the contents.	**–**
Buttons do not work.	• Power supply fluctuations or other abnormalities such as static electricity may interrupt correct operations.	• Turn the power on or off with the POWER button. Or disconnect the power plug and insert it into the wall outlet again.	**–**
The remote control does not work properly.	• The remote control is not pointed at the remote sensor of the DVD video player.	• Point the remote control at the remote sensor of the DVD video player.	**15**
	• The remote control is too far from the DVD video player.	• Operate the remote control within about 7 m.	**15**
	• The batteries in the remote control are exhausted.	• Replace the batteries with new ones.	**15**

Specifications

DVD video player / outputs / supplied accessories

DVD Video Player

Power supply	120 V AC, 60 Hz
Power consumption	16 W
Mass	3.5 kg
External dimensions	430 × 102 × 313 mm (W/H/D)
Signal system	Standard NTSC
Laser	Semiconductor laser, wavelength 650 nm
Frequency range	DVD linear sound : 48 kHz sampling 4 Hz to 22 kHz 96 kHz sampling 4 Hz to 44 kHz
Signal-to-noise ratio	More than 112 dB
Audio dynamic range	More than 106 dB
Harmonic distortion	Less than 0.001 %
Wow and flutter	Below measurable level (less than ±0.001 % (W.PEAK))
Operating conditions	Temperature: 5 °C to 35 °C, Operation status: Horizontal

Outputs

Video output	1.0 V (p-p), 75 Ω, negative sync., pin jack × 1
S video output	(Y) 1.0 V (p-p), 75 Ω, negative sync., Mini DIN 4-pin × 1 (C) 0.286 V (p-p), 75 Ω
Component video output	(Y) 1.0 V (p-p), 75 Ω, negative sync., pin jack × 1 (P_B)/(P_R) 0.7 V (p-p), 75 Ω, pin jack × 2
Audio output (BITSTREAM/PCM OPTICAL)	Optical connector × 1
Audio output (BITSTREAM/PCM COAXIAL)	0.5 V (p-p), 75 Ω, pin jack × 1
Audio output (2CH AUDIO)	2.0 V (rms), 220 Ω, pin jacks (L, R) × 1
Audio output (5.1CH SURROUND)	2.0 V (rms), 220 Ω, pin jacks × 6

Supplied Accessories

Audio/video cable 1
Remote control (SE-R0031) 1
Batteries (AAA) 2
Power cord 1

• Designs and specifications are subject to change without notice.

LIMITED WARRANTY DVD VIDEO PLAYER

Toshiba America Consumer Products, Inc. (“TACP”), Toshiba Hawaii (“THI”) and Toshiba Canada Limited (“TCL”) make the following limited warranties. These limited warranties extend to original purchaser or any person receiving this set as a gift from the original purchaser and to no other purchaser or transferee.

Limited Ninety (90) Day Warranty
TACP/THI warrant this product against defects in materials or workmanship for a period of ninety (90) days after the date of original retail purchase. During this period, TACP/THI will repair or replace a defective product or part, at their option, with a new or refurbished product or part without charge to you. You must deliver the entire product to a TACP/THI Authorized Service Station. You are responsible for all transportation and insurance charges for the unit to and from the Authorized Service Station. If you live in the U.S.A. you may, at your option, return your DVD Unit to:

Toshiba America Consumer Products Inc.
Returns Center
1420C Toshiba Dr.
Lebanon, TN 37087

Upon receipt we will, at our option, exchange the DVD Unit with a new or refurbished unit. **Canadian consumers are requested to contact TCL. In Hawaii consumers are requested to contact THI.**

Limited One (1) Year Warranty
TACP/THI further warrant the parts in this product against defects in materials or workmanship for a period of one (1) year after the date of original retail purchase. During this period, TACP/THI will repair or replace a defective product or part, at their option, with a new or refurbished product or part without charge to you, except that if a defective part is replaced after ninety (90) days from the date of the original retail purchase you pay labor charges involved in the replacement. You must also deliver the entire product to a TACP/THI Authorized Service Station. You are responsible for all transportation and insurance charges for the unit to and from the Authorized Service Station. If you live in the U.S.A. you may, at your option, return your DVD Unit to:

Toshiba America Consumer Products Inc.
Returns Center
1420C Toshiba Dr.
Lebanon, TN 37087

Upon receipt we will, at our option, exchange the DVD Unit with a new or refurbished unit. **Canadian Consumers are requested to contact TCL. In Hawaii consumers are requested to contact THI.**

Rental Units
The warranty for rental units begin with the first rental or thirty (30) days from the date of shipment to the rental firm, whichever comes first.

Commercial Units
Products sold and used for commercial use have a limited ninety (90) day warranty for all parts and labor.

Owner’s Manual
You should read the owner’s manual thoroughly before operating this product. You should complete and mail the enclosed Demographic card within ten (10) days after you, or the person who has given you this product as a gift, purchased this product. This is one way to enable TACP to provide you with better customer service and improved products. Failure to return the card will not affect your rights under this warranty.

Your Responsibility
The above warranties are subject to the following conditions:

(1) You must retain your bill of sale or provide other proof of purchase.
(2) You must notify a TACP/THI/TCL /Authorized Service Station within thirty (30) days after you discover a defective product or part.
(3) All warranty servicing of this product must be made by a TACP/THI/TCL Authorized Service Station.
(4) U.S.A. warranties are effective only if the product is purchased and operated in the Continental U.S.A. or Puerto Rico.
(5) Labor service charges for set installation. Set up, adjustment of customer controls and installation or repair of antenna systems are not covered by this warranty. Reception problems caused by inadequate antenna systems are your responsibility.
(6) Warranties extend only to defects in materials or workmanship as limited above and do not extend to any product or parts which have been lost or discarded by you or to damage to products or parts caused by misuse, accident, damage caused by Acts of God, such as lighting or fluctuations in electric power, improper installation, improper maintenance or use in violation of instructions furnished by us; or to units which have been altered or modified without authorization of TACP/THI/TCL or to damage to products or part thereof which have had the serial number removed, altered, defaced or rendered illegible.
(7) Should you elect to return your DVD Unit to TACP after the ninety (90) days and within one (1) year, or after the warranty period has expired: Call (800)-631-3811 to receive information concerning an exchange price. Payment must be enclosed with product in the form of a certified check or money order including reason for return.
(8) Physically damaged DVD Units are not acceptable for repair or exchange whether in or out of warranty and will be returned as received.

How to Obtain Warranty Service

(1) Refer to the troubleshooting guide in your owner's manual. This check list may solve your problem.
(2) In the U.S.A., only call the TACP toll free number 800-631-3811, or if in Hawaii or Canada see listing below within (30) days after you find a defective product or part.
(3) Arrange for the delivery of the product to the TACP/THI/TCL Authorized Service Station or TACP Return Center. Products shipped to the Service Station must be insured and safely and securely packed, preferably in the original shipping carton, and a letter explaining the defect and also a copy of the bill of sale or other proof of purchase must be enclosed.

In the Continental United States contact:

In Hawaii contact:
Toshiba Hawaii Inc.
327 Kamakee Street
Honolulu, HA 96814
(808)-521-5377

In Canada contact:
Consumer Electronics Group
191 McNabb Street
Markham, Ontario L3R 8H2
(905)-470-5400

Consumer Electronics Group
22171 Fraserwood Way
Richmond, B.C. V6W 1J5
(604)-303-2500

Consumer Electronics Group
1643 North Service Road
Droval, QC H9P 1J1
(514)-856-4100

All warranties implied by state law, including the implied warranties of merchantability and fitness for a particular purpose, are expressly limited to the duration of the limited warranties set forth above. With the exception of any warranties implied by state law as hereby limited, the foregoing warranty is exclusive and in lieu of all other warranties, guarantees, agreements and similar obligations of manufacturer or seller with respect to the repair or replacement of any parts. In no event shall TACP/THI be liable for consequential or incidental damages.
No person, agent, distributor, dealer or company is authorized to change, modify or extend the terms of these warranties in any manner whatsoever. The time within which an action must be commenced to enforce any obligation of TACP/THI arising under the warranty or under any statute, or law of the United States or any state thereof, is hereby limited to ninety (90) days from the date you discover or should have discovered, the defect. This limitation does not apply to implied warranties arising under state law.
This warranty gives you specific legal rights and you may also have other rights which may vary from state to state. Some states do not allow limitation on how long an implied warranty lasts, when an action may be brought, or the exclusion or limitation of incidental or consequential damages, so the above provisions may not apply to you.

ATTENTION CANADIAN CONSUMERS:
Canadian consumers are requested to complete the special Canadian "Warranty Registration Form" enclosed, and forward this completed form with a copy of bill of sale to TOSHIBA OF CANADA to "Register and Validate" their warranty. Product must be purchased from an Authorized Canadian Dealer. Products purchased in the U.S.A. and used in Canada are not covered by these warranties.

IMPORTANT: PACKING AND SHIPPING INSTRUCTION
When you send the product to a Service Station, you must use the original carton box and packing material, then insert the original carton box containing the unit into another carton using more packing material.

2. LOCATION OF MAIN PARTS AND MECHANISM PARTS

2-1. Location of Main Parts

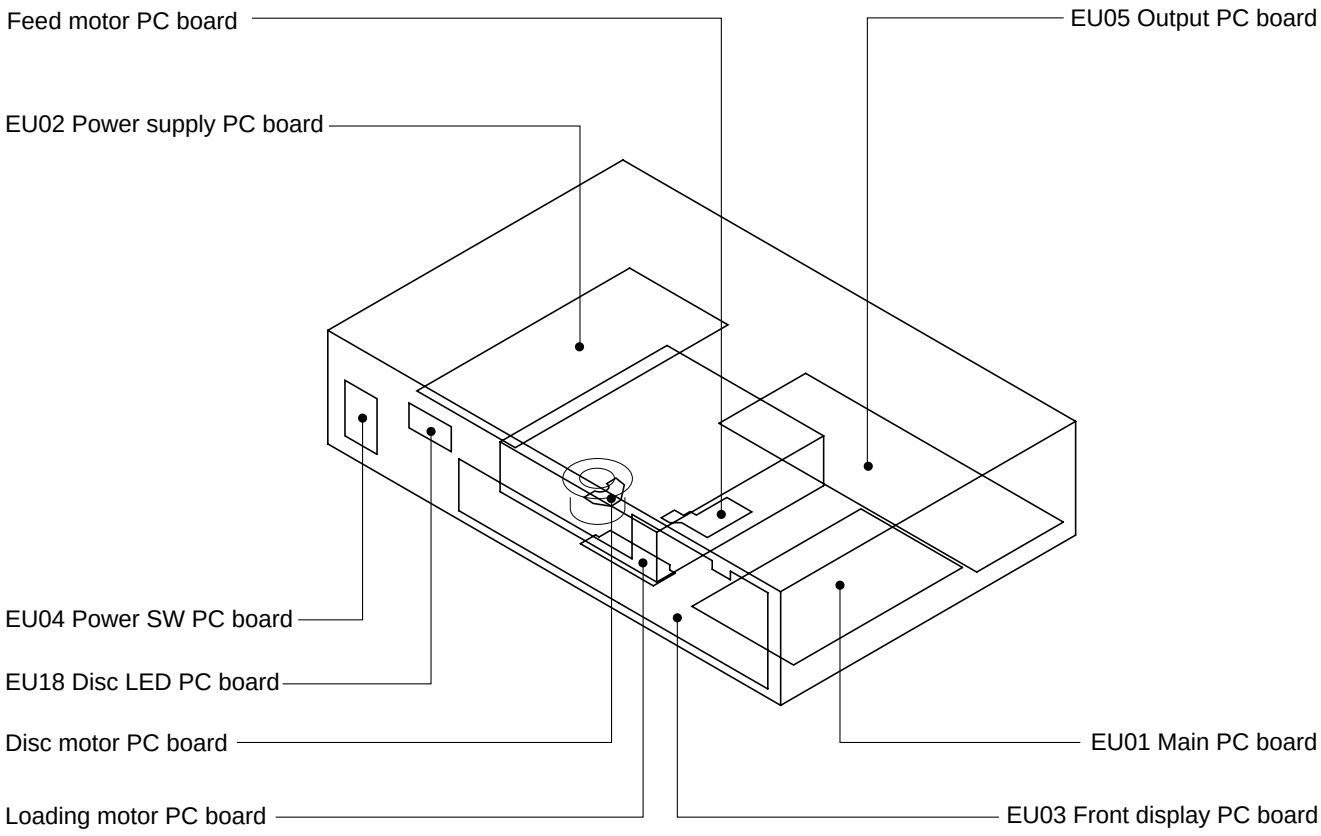

Feed motor PC board
EU05 Output PC board
EU02 Power supply PC board
EU04 Power SW PC board
EU18 Disc LED PC board
Disc motor PC board
EU01 Main PC board
Loading motor PC board
EU03 Front display PC board

Fig. 1-2-1

2-2. Location of Mechanism Parts

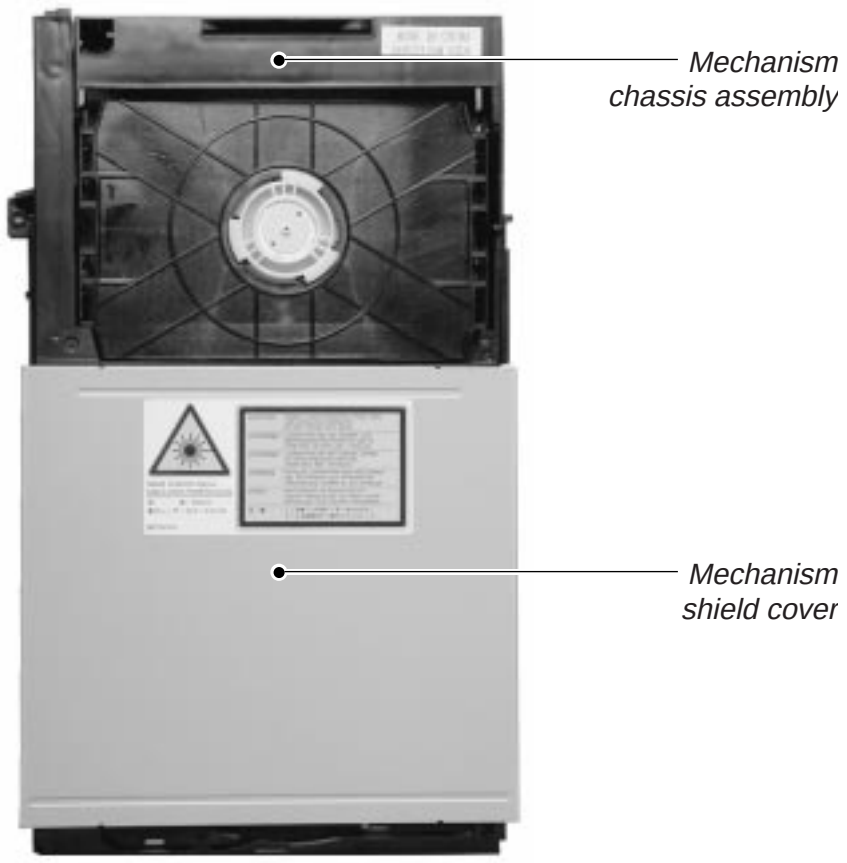


Fig. 1-2-2 Mechanism chassis assembly (Top side)

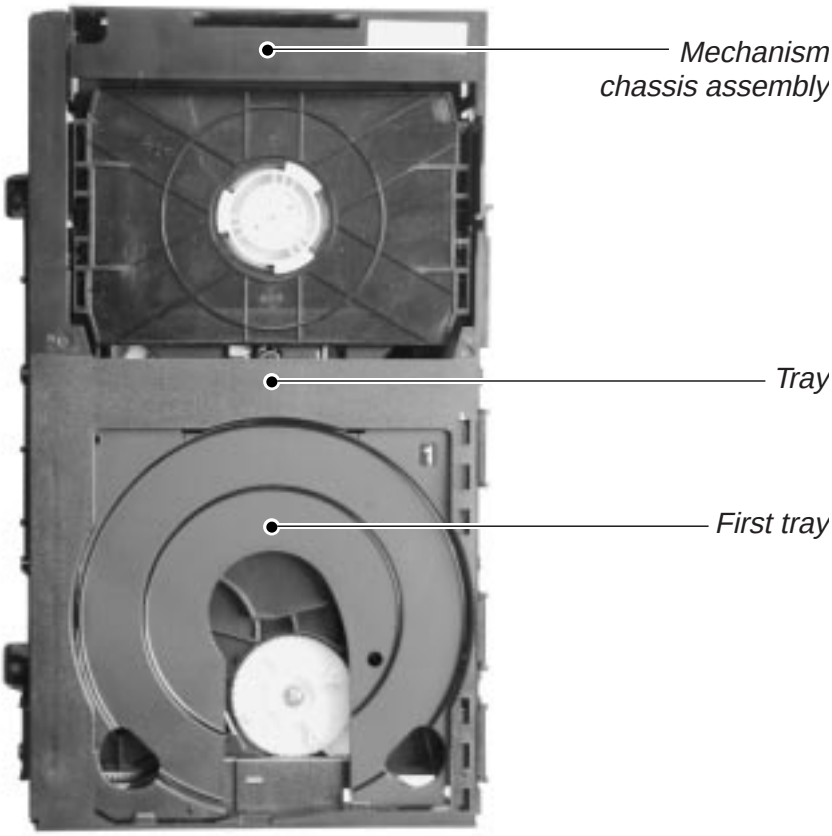


Fig. 1-2-3 Mechanism chassis assembly (Bottom side)

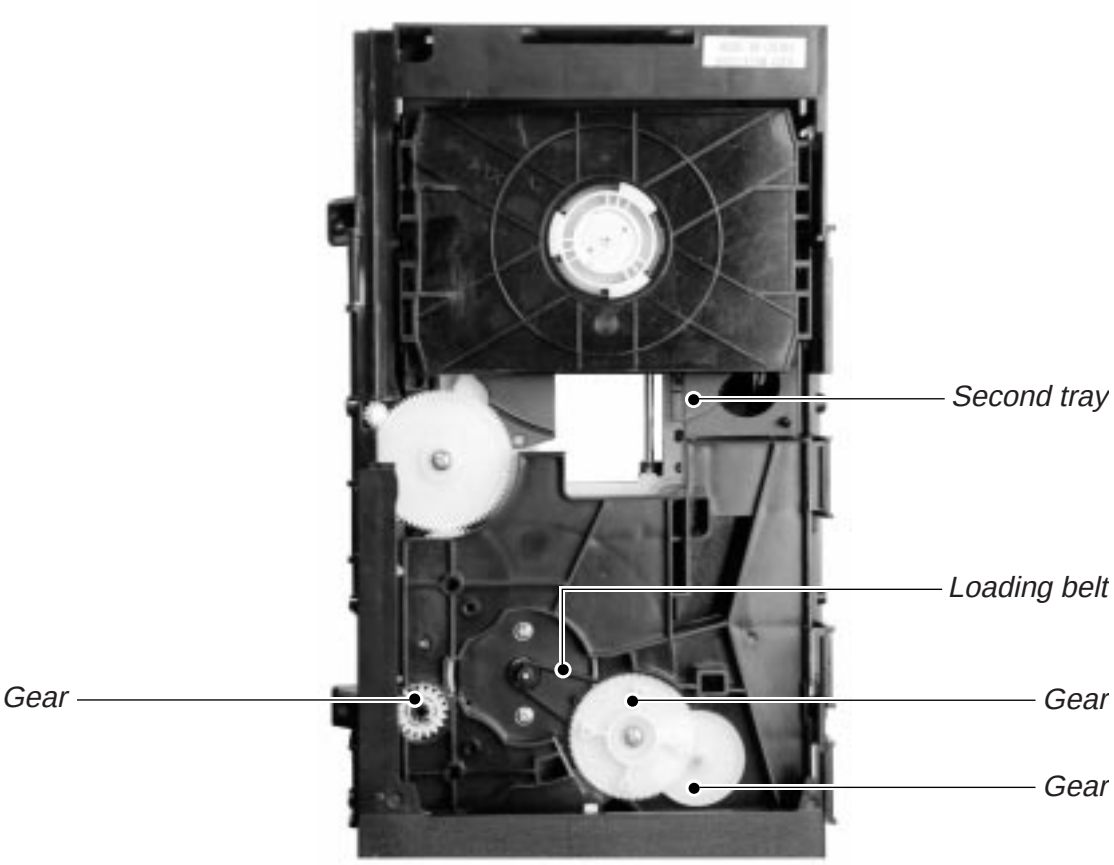


Fig. 1-2-4 Mechanism chassis assembly (Internal side)

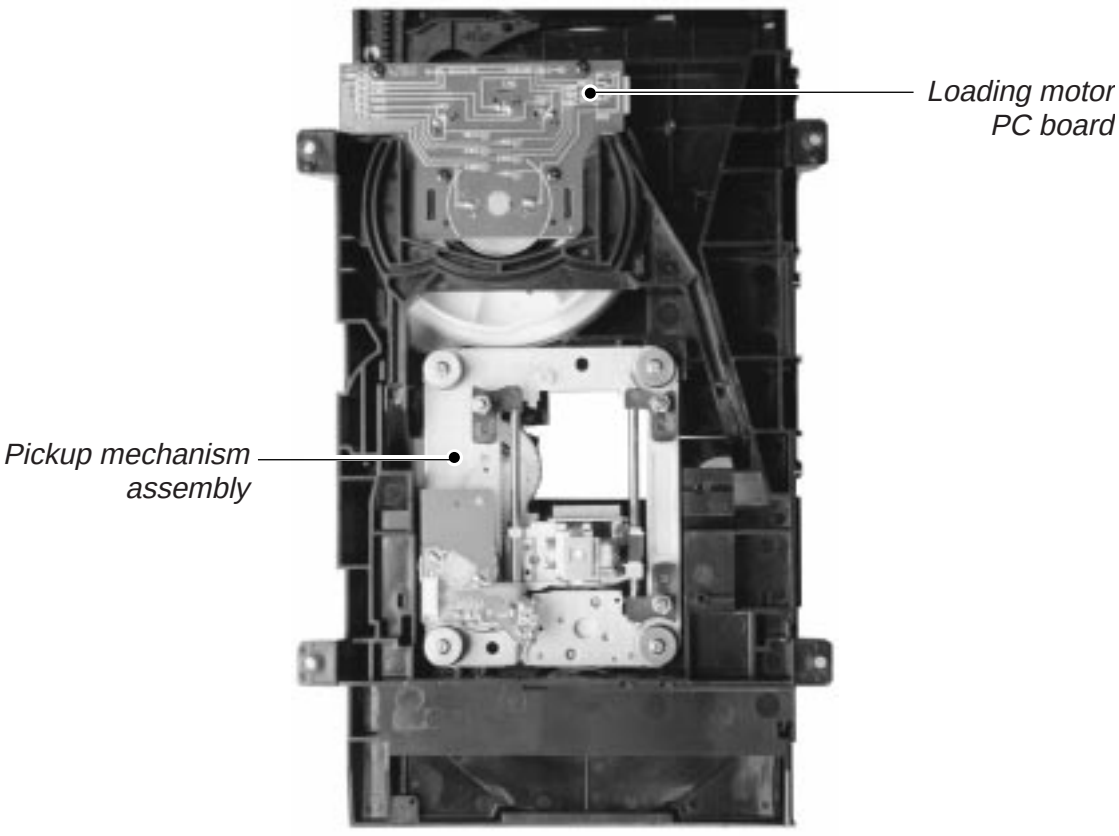


Fig. 1-2-5 Mechanism chassis assembly (Bottom side)

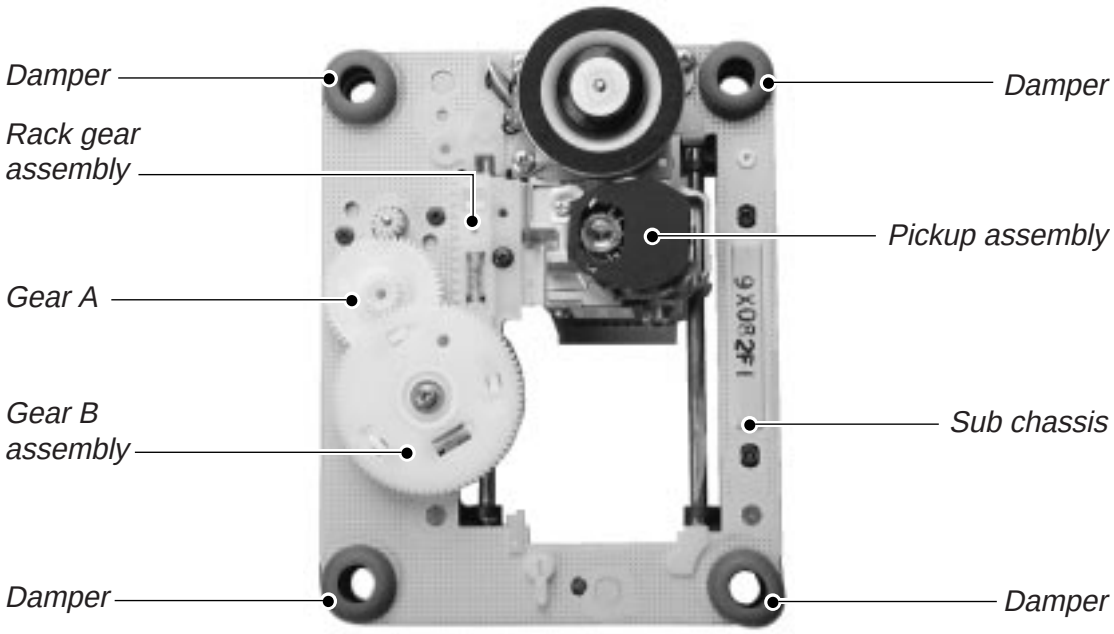


Fig. 1-2-5 Pickup mechanism chassis assembly (Top side)

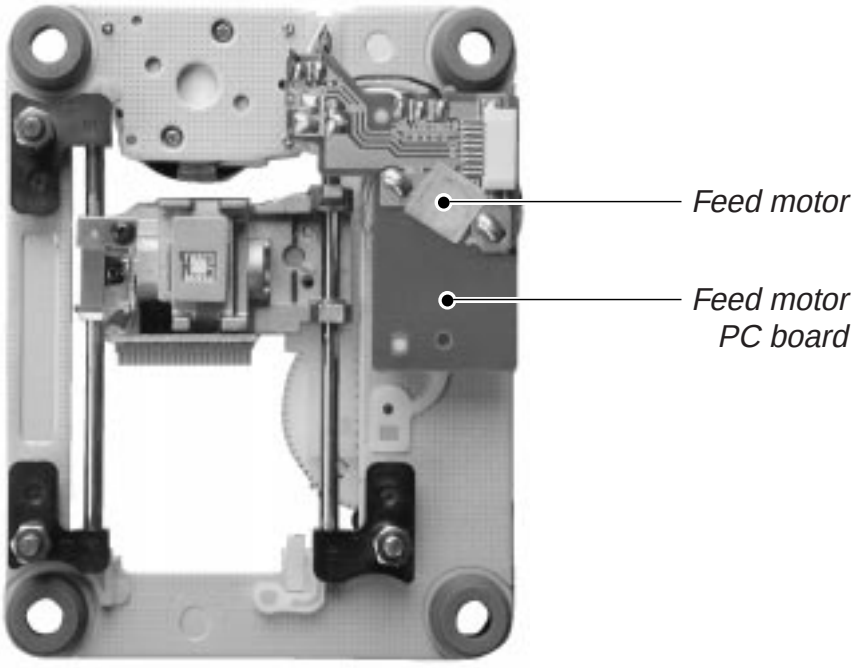


Fig. 1-2-6 Pickup mechanism chassis assembly (Bottom side)

3. TROUBLESHOOTING

3-1. Main Circuit

3-1-1. Servo System

(1) Initial Operation after Power ON

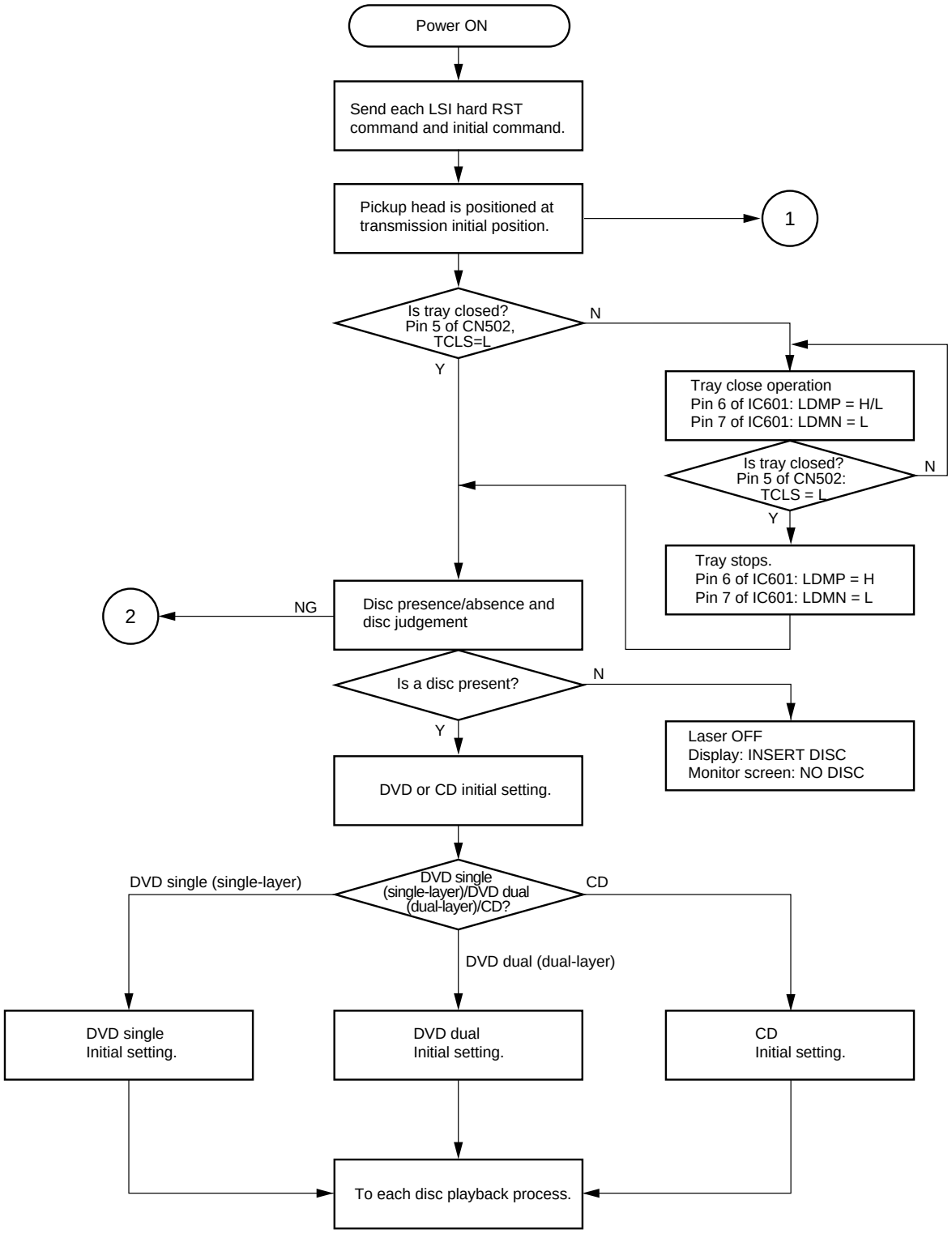


Fig. 1-3-1

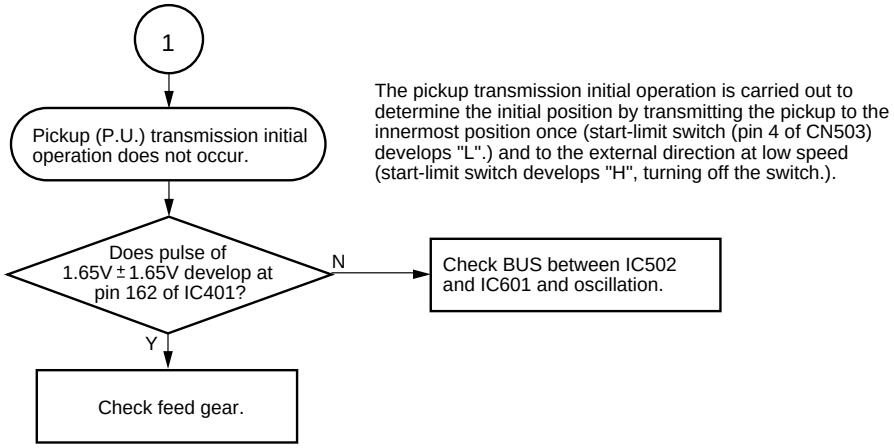

1
Pickup (P.U.) transmission initial operation does not occur.
The pickup transmission initial operation is carried out to determine the initial position by transmitting the pickup to the innermost position once (start-limit switch (pin 4 of CN503) develops "L".) and to the external direction at low speed (start-limit switch develops "H", turning off the switch.).
Does pulse of 1.65V ± 1.65V develop at pin 162 of IC401?
N
Check BUS between IC502 and IC601 and oscillation.
Y
Check feed gear.

Fig. 1-3-2

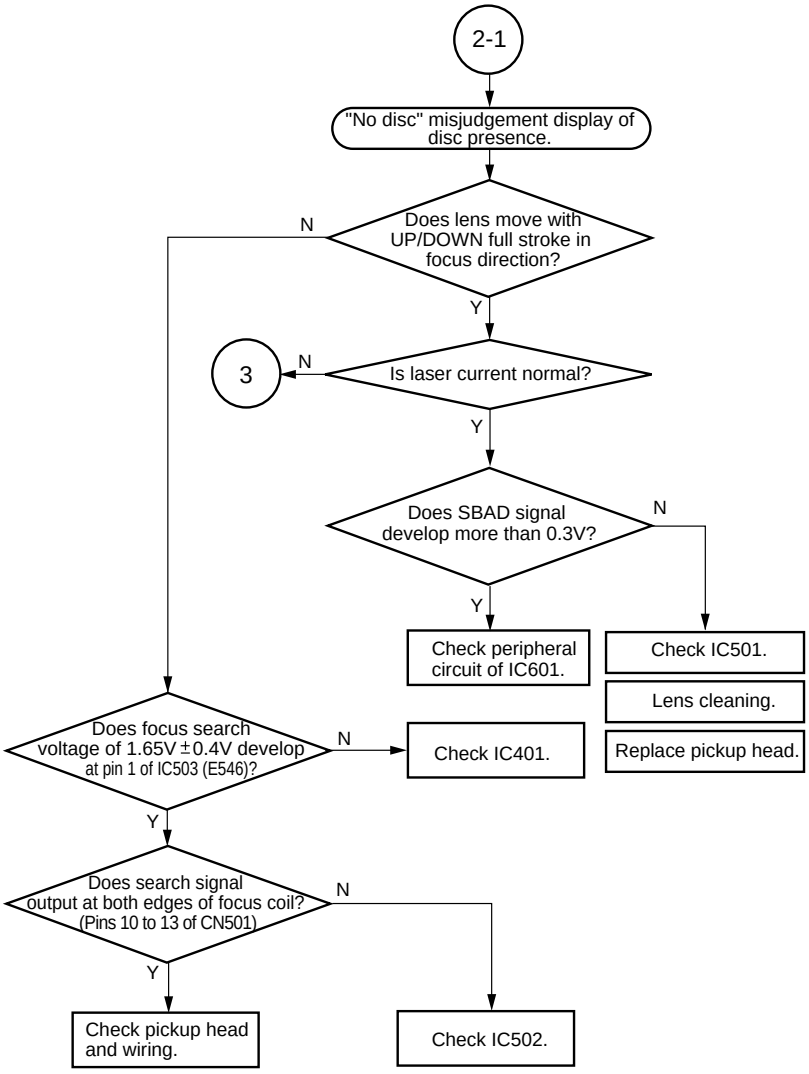


Fig. 1-3-3

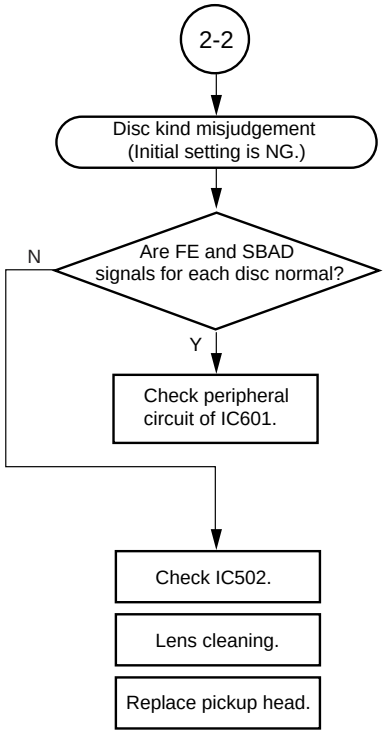


Fig. 1-3-4

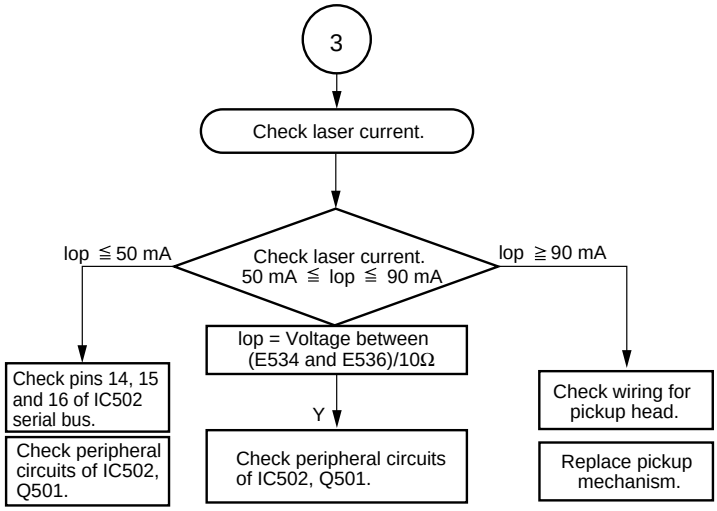


Fig. 1-3-5

DVD single (single-layer) disc detection waveform

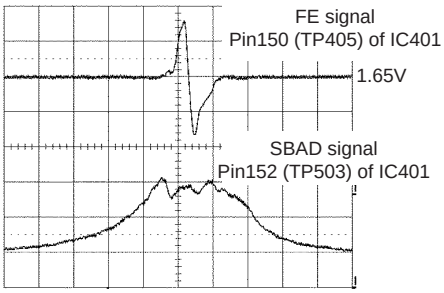


Fig. 1-3-6

DVD dual (dual-layer) disc detection waveform

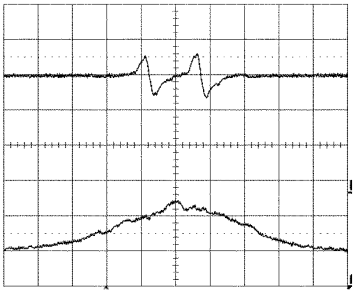


Fig. 1-3-7

CD disc detection waveform

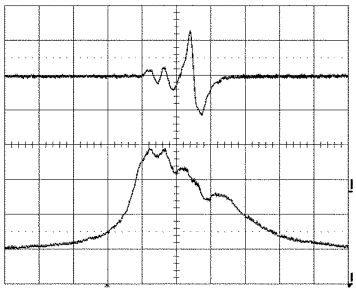


Fig. 1-3-8

(2) Picture appears (PLAY)

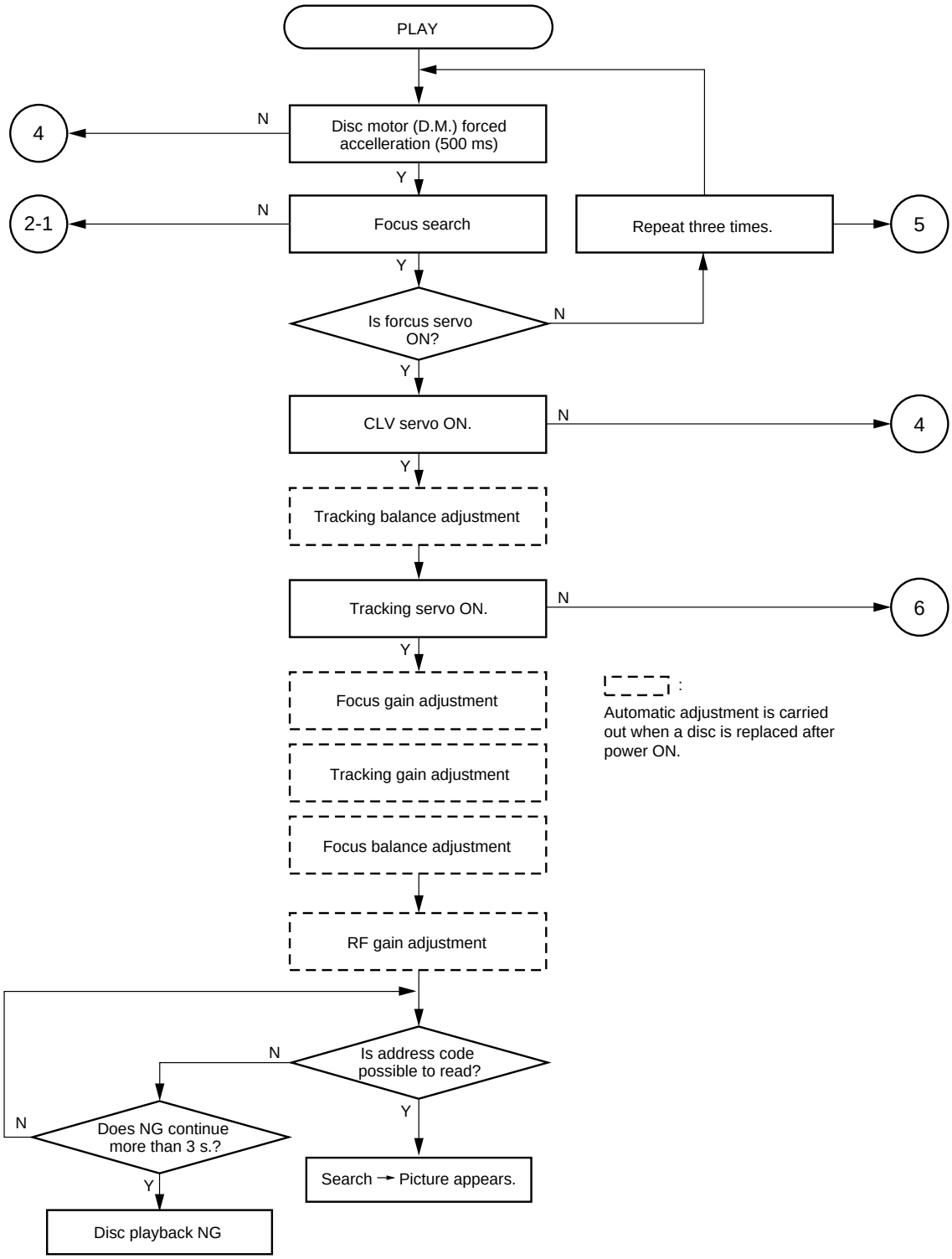


Fig. 1-3-9

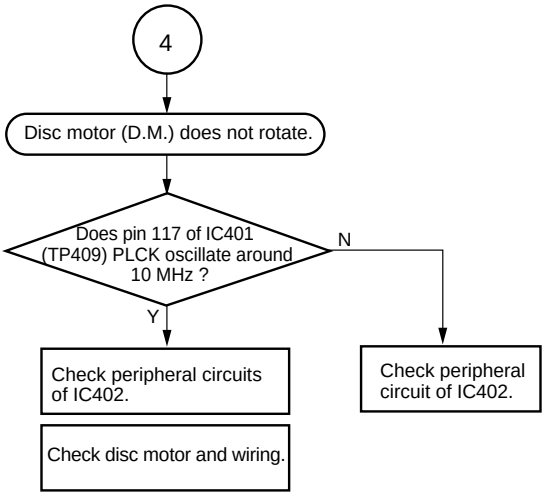

4
Disc motor (D.M.) does not rotate.
Does pin 117 of IC401 (TP409) PLCK oscillate around 10 MHz ?
N
Y
Check peripheral circuits of IC402.
Check peripheral circuit of IC402.
Check disc motor and wiring.

Fig. 1-3-10

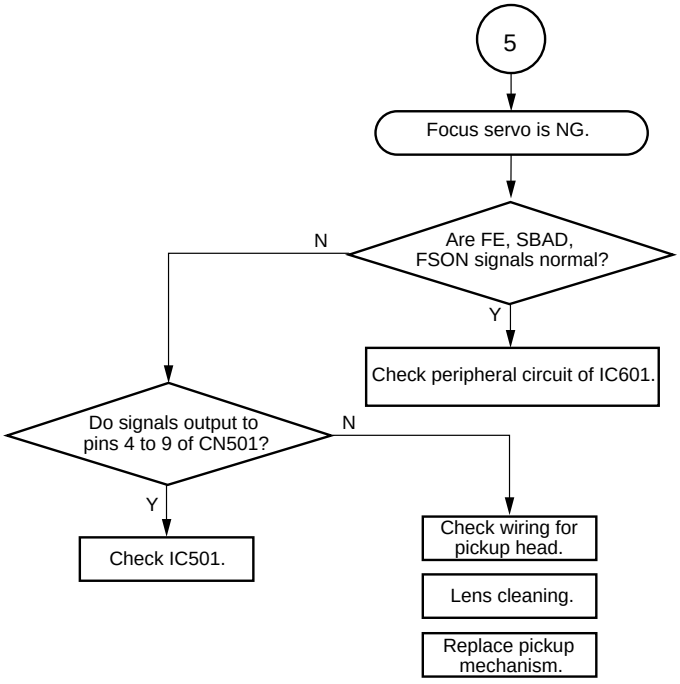


Fig. 1-3-11

Focus servo ON signal waveform

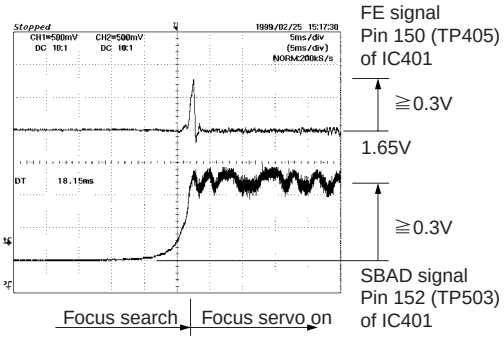


Fig. 1-3-12

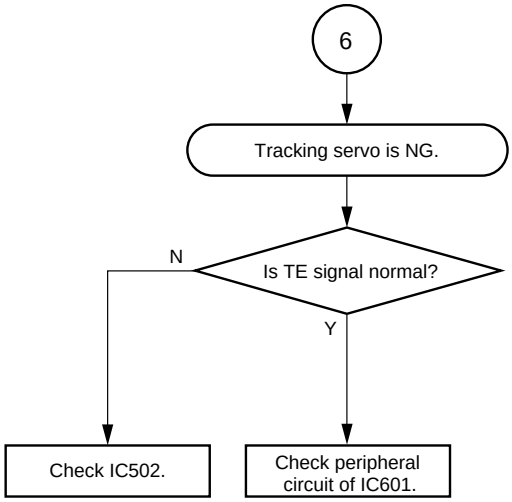
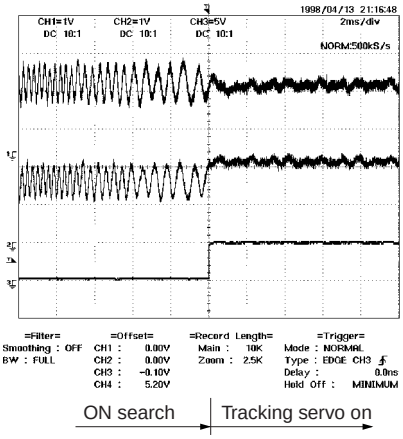


Fig. 1-3-13

Signal waveform at tracking servo ON (CD)


1998/04/13 21:16:48
CH1=1V DC 10:1
CH2=1V DC 10:1
CH3=5V DC 10:1
2ms/div
NORM:500kS/s
=Filter= Smoothing : OFF BW : FULL
=Offset= CH1 : 0.00V CH2 : 0.00V CH3 : -0.10V CH4 : 5.20V
=Record Length= Main : 10K Zoom : 2.5K
=Trigger= Mode : NORMAL Type : EDGE CH3 Delay : 0.0ns Hold Off : MINIMUM

TE signal
Pin 151 (TP406) of IC401
1.65V

RFRP signal
Pin 153 (TP408) of IC401

Search ON (SRCH)
Pin 38 (TP411) of IC401

ON search | Tracking servo on

Fig. 1-3-14

Signal waveform at tracking servo ON (DVD)

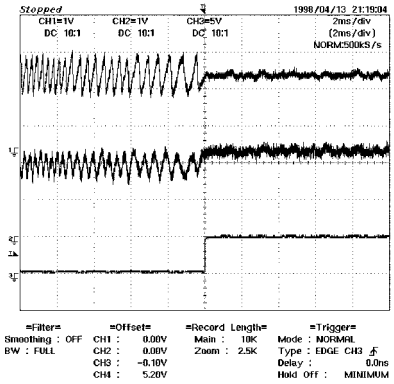

Stopped
1998/04/13 21:19:04
CH1=1V DC 10:1
CH2=1V DC 10:1
CH3=5V DC 10:1
2ms/div
(2ms/div)
NORM:500kS/s
=Filter= Smoothing : OFF BW : FULL
=Offset= CH1 : 0.00V CH2 : 0.00V CH3 : -0.10V CH4 : 5.20V
=Record Length= Main : 10K Zoom : 2.5K
=Trigger= Mode : NORMAL Type : EDGE CH3 Delay : 0.0ns Hold Off : MINIMUM

Fig. 1-3-15

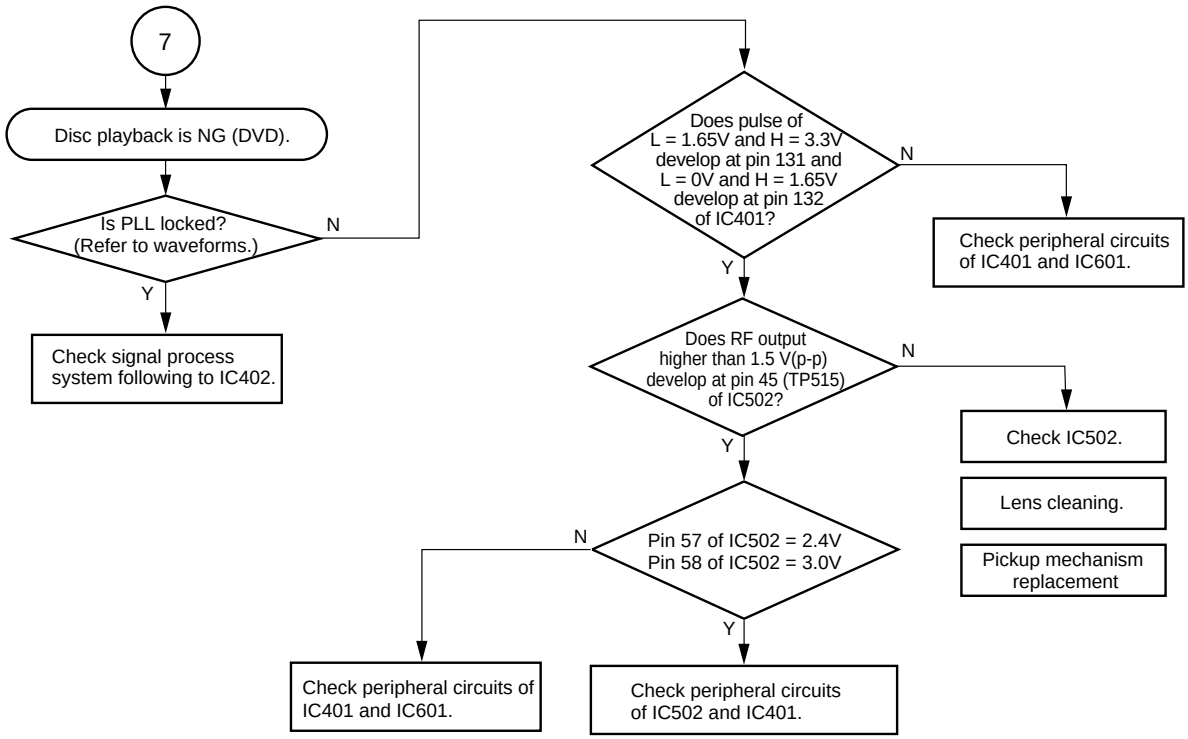
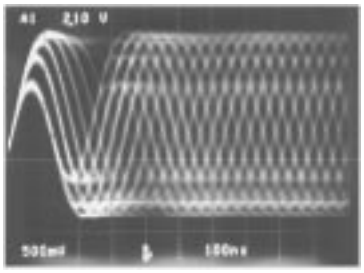


Fig. 1-3-16

PLL works as a servo loop to generate a clock signal for reading RF signal binary data. With the PLL locked, the eye pattern is identified clearly when triggered with the read clock PLCK.

DVD RF signal

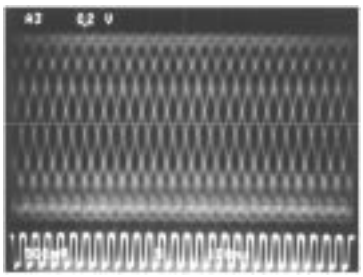


DVD RF signal
Pin 45 (TP502) of IC502

V : 500 mV/div
H : 50 ns/div

Fig. 1-3-17

DVD playback waveform



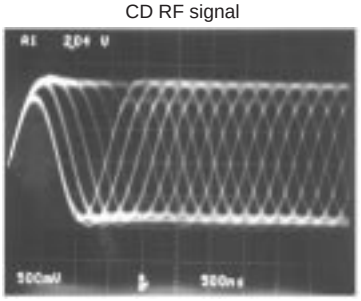
DVD RF signal
Pin 45 (TP502) of IC502

DVD PLCK
Pin 117 (TP409) of IC401

CH1 : TP515 DVDRF 500 mV/div
CH2 : TP511 DVDPLCK 5 V/div
50 ns/div

Fig. 1-3-19

CD RF signal

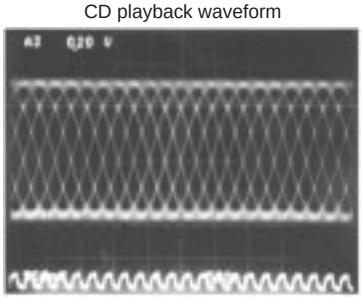


CD RF signal
Pin 45 (TP502) of IC502

V : 500 mV/div
H : 100 ns/div

Fig. 1-3-18

CD playback waveform



CD RF signal
Pin 45 (TP502) of IC502

CD PLCK
Pin 117 (TP409) of IC401

CH1 : TP502 CDRF 500 mV/div
CH2 : TP409 CDPLCK 5 V/div
100 ns/div

Fig. 1-3-20

3-1-2. Location Diagram of Servo Test Point

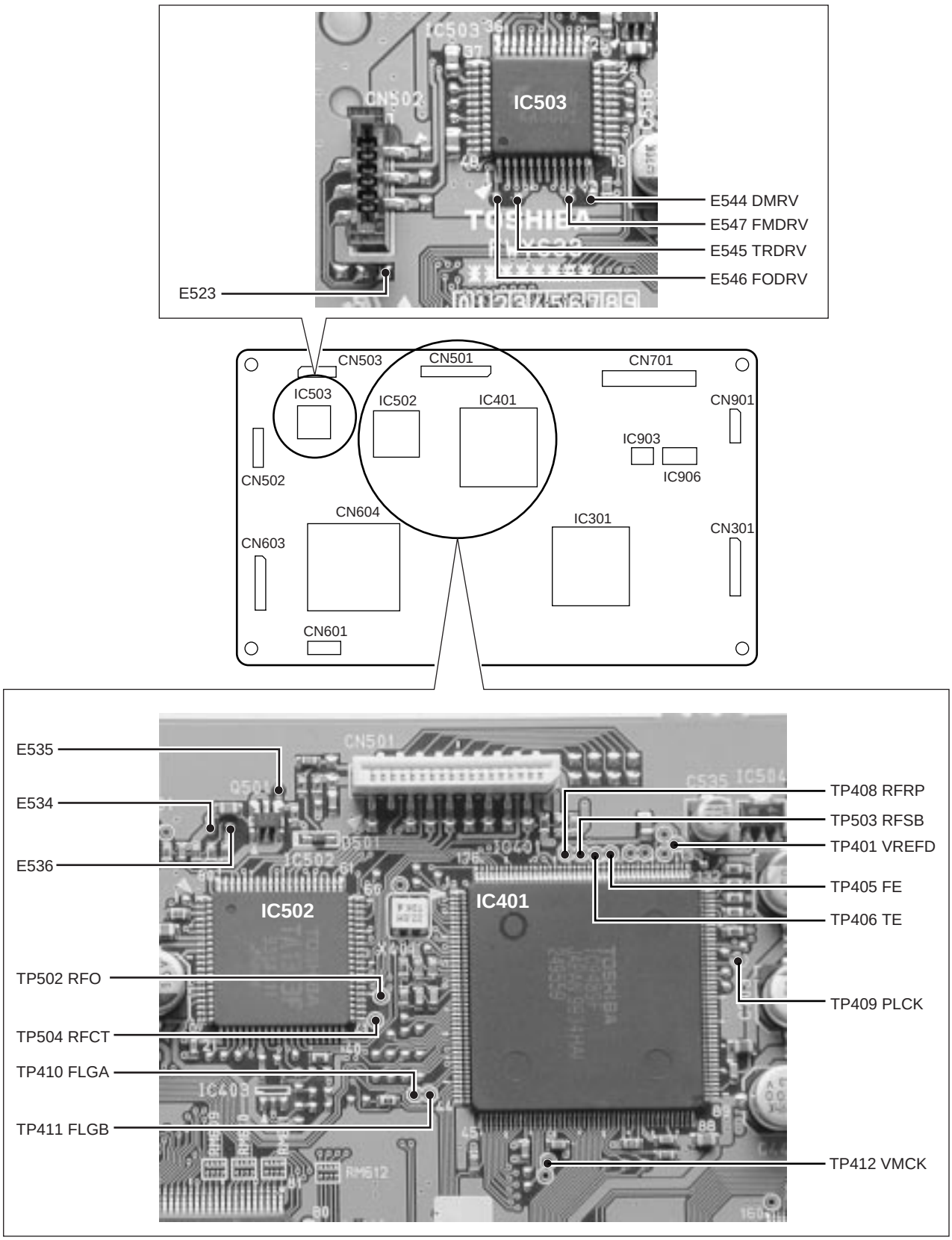


Fig. 1-3-21

SECTION 2
PART REPLACEMENT AND ADJUSTMENT PROCEDURES

CAUTIONS BEFORE STARTING SERVICING

Electronic parts are susceptible to static electricity and may easily damaged, so do not forget to take a proper grounding treatment as required.

Many screws are used inside the unit. To prevent missing, dropping, etc. of the screws, always use a magnetized screwdriver in servicing. Several kinds of screws are used and some of them need special cautions. That is, take care of the tapping screws securing molded parts and fine pitch screws used to secure metal parts. If they are used improperly, the screw holes will be easily damaged and the parts can not be fixed.

1. REPLACEMENT OF MECHANICAL PARTS

1-1. Cabinet Replacement

1-1-1. Top Cover

1. Remove five screws (1) and remove the top cover (2).

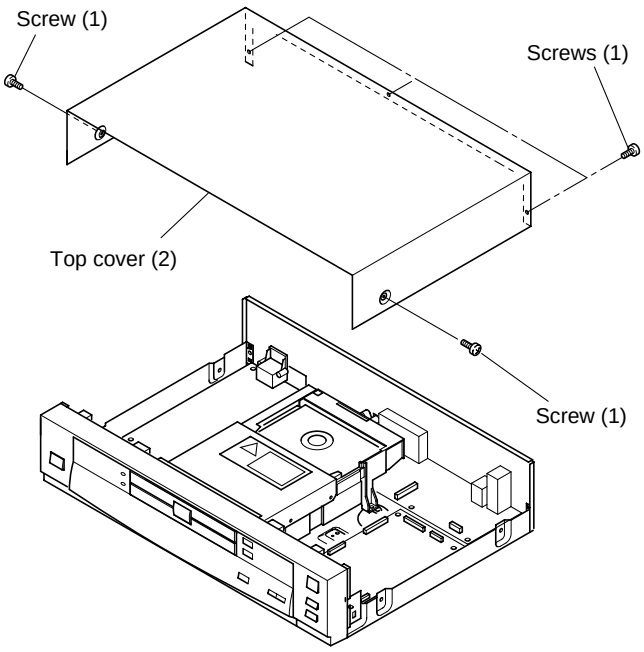


Fig. 2-1-1

1-1-2. Tray Panel

<Tray Ejection>

1. Remove four screws (1) and remove the mechanism shield cover (2).

Note:

- When mounting the mechanism shield cover (2), tighten four screws (1) with the cover lifted as much as possible, since a little gap is provided between the cover and the mechanism chassis.

2. Turn the gear (4) clockwise to eject the tray (5). (Refer to Fig. 2-1-3.)

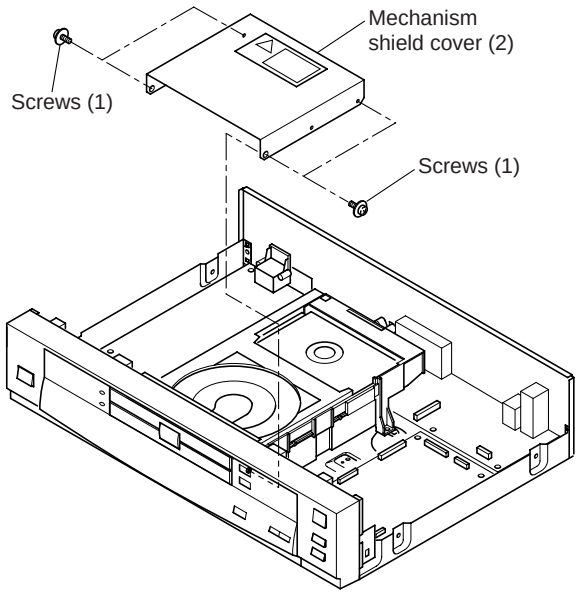


Fig. 2-1-2

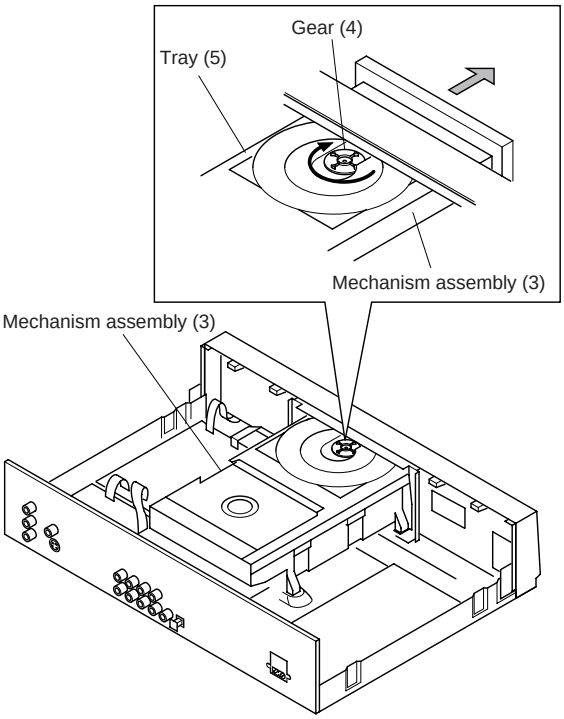


Fig. 2-1-3

<Tray Panel Removal>

1. Eject the tray (3).
2. Twist the tray panel (4) a little in the arrow A direction with the tray (3) held to release two claws and lift up the tray panel (4) in the arrow B direction, then the tray panel (4) is removed.
3. When mounting the tray panel (4), fit the tray panel (4) into the groove of the both sides of the tray (3) until it clicks.

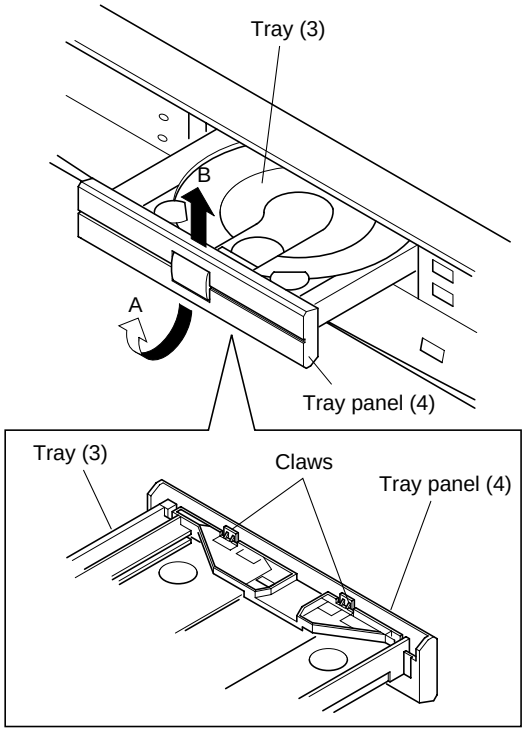


Fig. 2-1-4

1-1-3. Front Panel

1. Remove the flexible cable (1).
2. Release four claws (2) and remove the front panel (3).

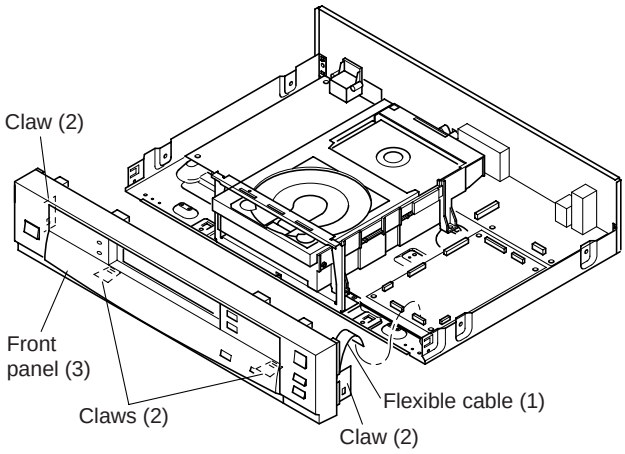


Fig. 2-1-5

1-1-4. Rear Panel

1. Remove eight screws (1) and remove the rear panel (2).

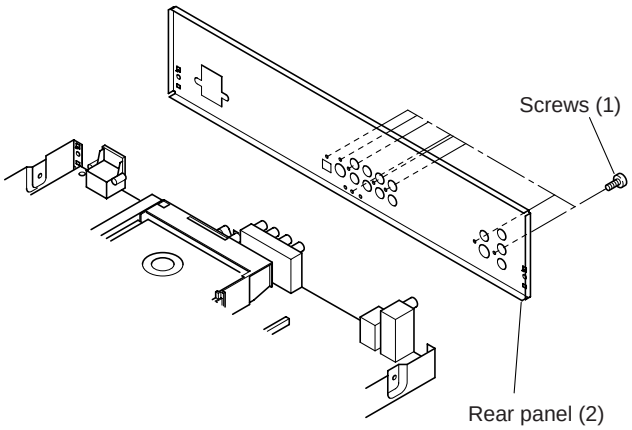


Fig. 2-1-6

1-2. PC Board Replacement

1-2-1. Main PC Board

Note:

- Before removing the main PC board (4), be sure to short-circuit the laser diode output land.

  After replacing, open the land after inserting the flexible cables (1).

1. Remove the top cover. (Refer to item 1-1-1.)
2. Remove six flexible cables (1) and remove one connector (2).
3. Remove four screws (3).
4. Release two claws and remove the main PC board (4).

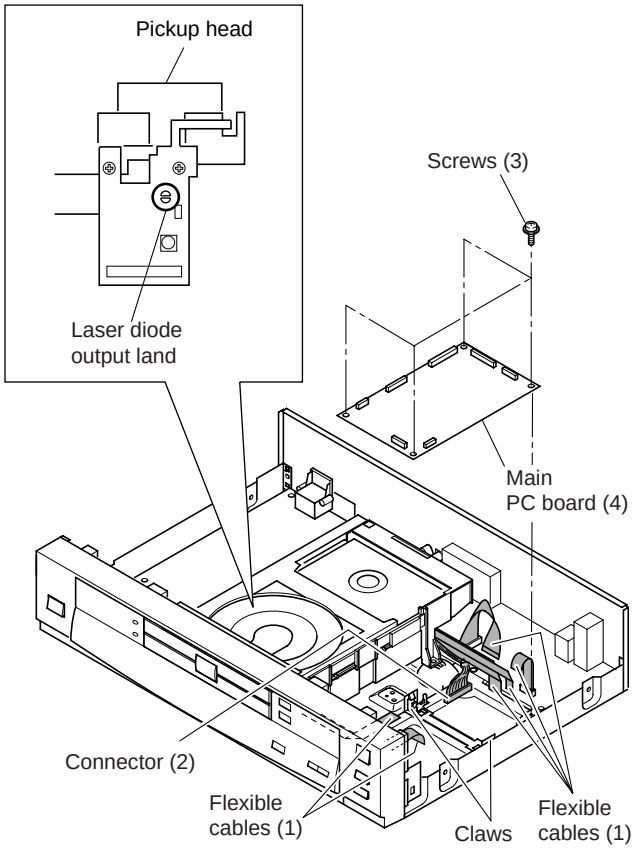


Fig. 2-1-7

1-2-2. Output PC Board

1. Remove the rear panel. (Refer to item 1-1-4.)
2. Peel off the tape (1).
3. Remove the connector (2).
4. Remove two flexible cables (3).
5. Remove the wire part of the connector (5) from the binding band (4).
6. Remove three screws (6) and remove the output PC board (7).

Note:

- When mounting, keep the wire part of the connector (5) with the binding band (4).

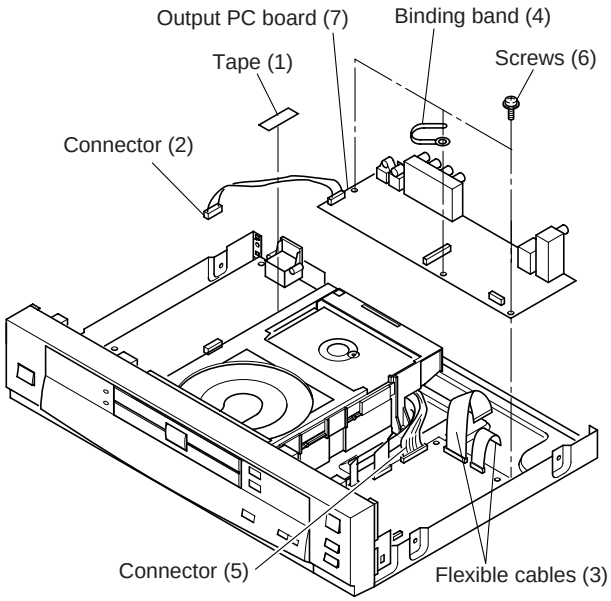


Fig. 2-1-8

1-2-3. Power Supply PC Board

1. Peel off the tape (1).
2. Remove the connector (2).
3. Remove the connector (3).
4. Release the wire part of the connector with the binding band (4) tightened.
5. Remove three screws (5).
6. Remove two screws (6).
7. Release two claws and remove the power PC board (7).

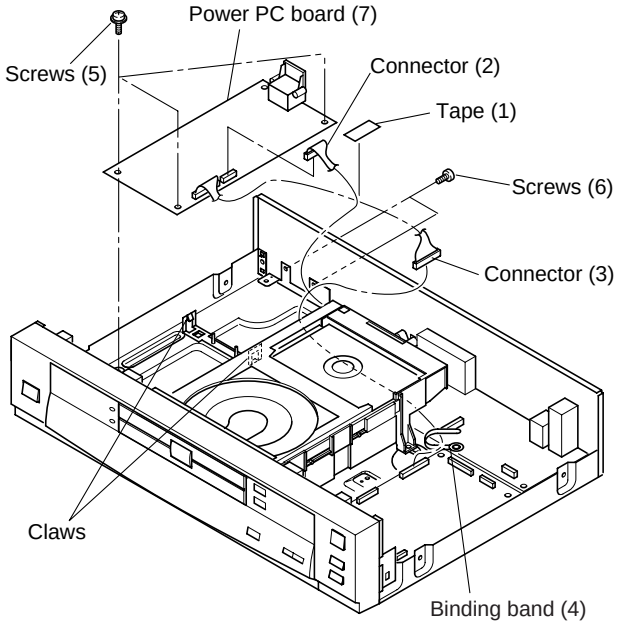


Fig. 2-1-9

1-2-4. Front Display and Power SW PC Boards

1. Remove the front panel. (Refer to item 1-1-3.)
2. Remove seven screws (1) and remove the front display PC board (2).
3. Remove two screws (3) and remove the power switch PC board (4).
4. Remove one screw (5) and remove the LED PC board (6)

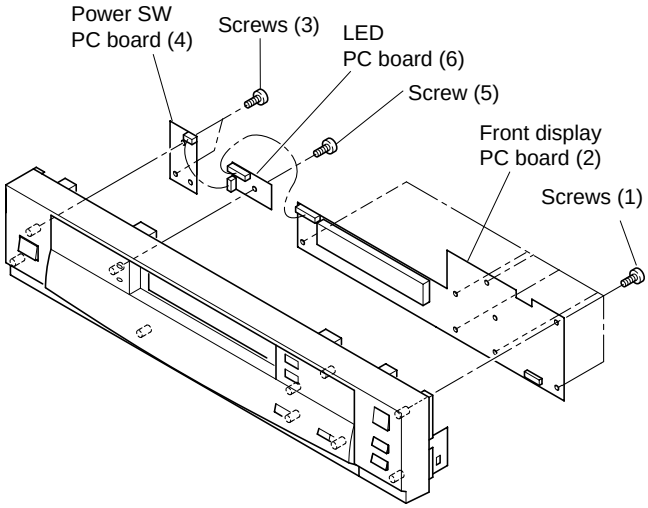


Fig. 2-1-10

1-3. Mechanism Parts Replacement

1-3-1. Mechanism Chassis Assembly

Note:

- Before removing the connectors and flexible cables, be sure to short-circuit the laser diode output land. After replacing the mechanism chassis assembly, open the land after inserting the connectors and flexible cables.

1. Remove the front panel. (Refer to item 1-1-3.)
2. Remove three flexible cables (1).
3. Remove four screws (2) and remove the mechanism chassis assembly (3).

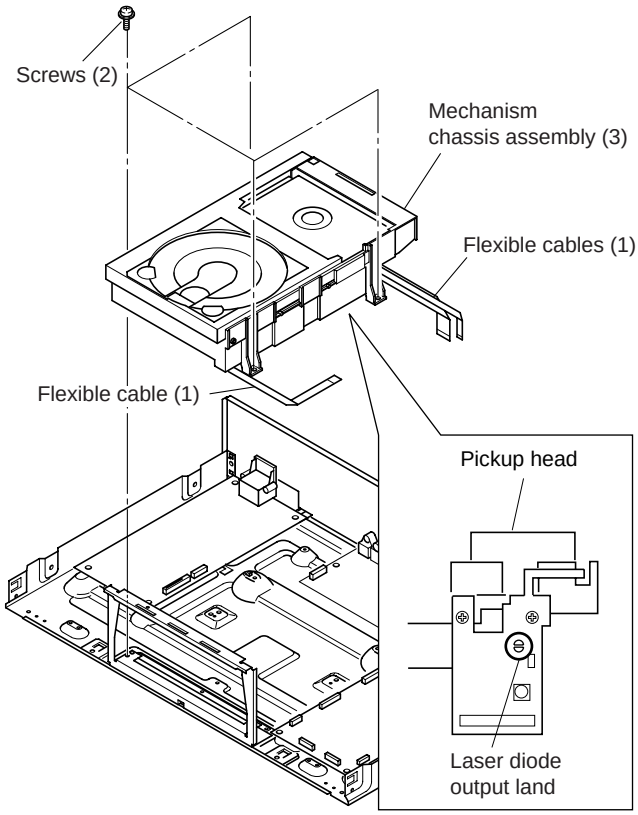


Fig. 2-1-11

1-3-2. Loading Belt

1. Eject the tray (1). (Refer to item 1-1-2.)
   Pull out the tray (1) to this side until it stops.
2. Remove one screw (2) and remove the gear (3).
3. Remove the gear (4) and loading belt (5).
4. Replace the loading belt (5).
5. Perform the reverse steps of removal described above for mounting.

Note:

- When mounting the loading belt (5), take care not to twist it or attach grease, etc.

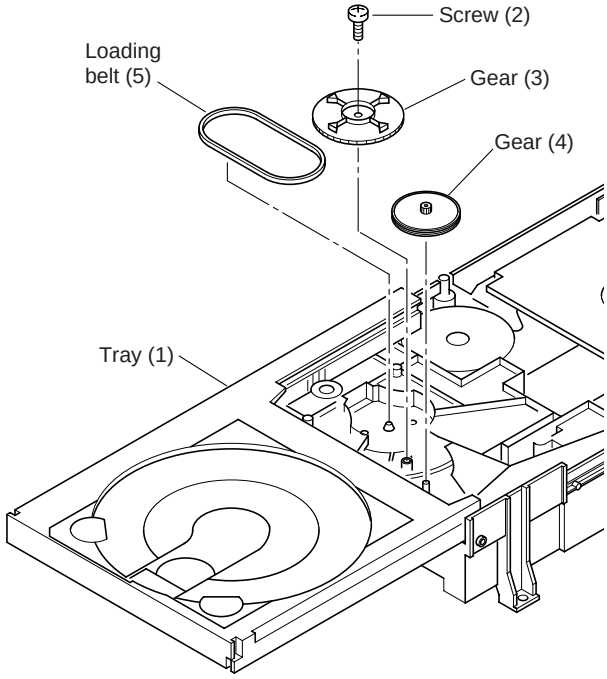


Fig. 2-1-12

1-3-3. Loading Motor

<Removal>

1. Remove the loading belt. (Refer to item 1-3-2.)
2. Remove two screws (1).
3. Remove four screws (2) and remove the loading motor (3) (with the loading motor PC board (4) attached).
4. Desolder the terminal part of the loading motor (3) and remove the loading motor PC board (4).
5. Replace the loading motor (3).

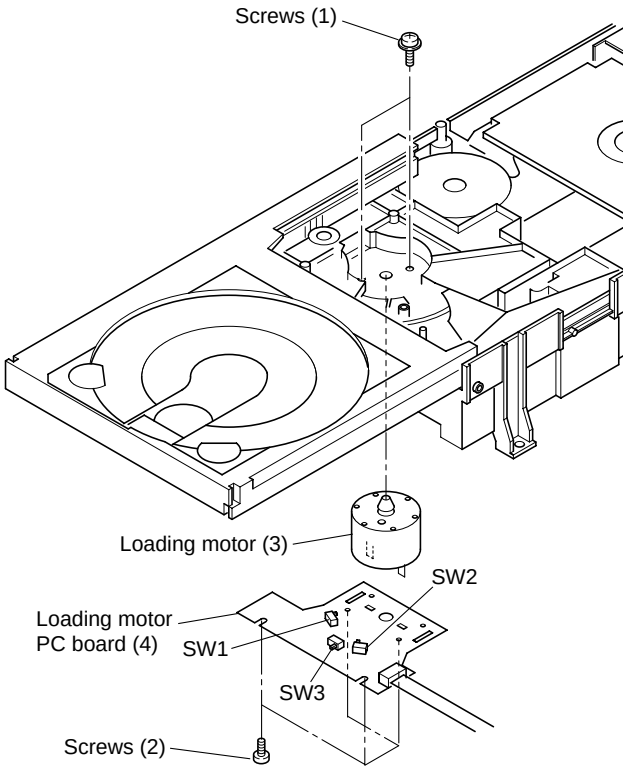


Fig. 2-1-13

<Mounting>

1. Eject the second tray 2. (Set the POM mark of the cam to the position as shown in Fig. 2-1-14.)

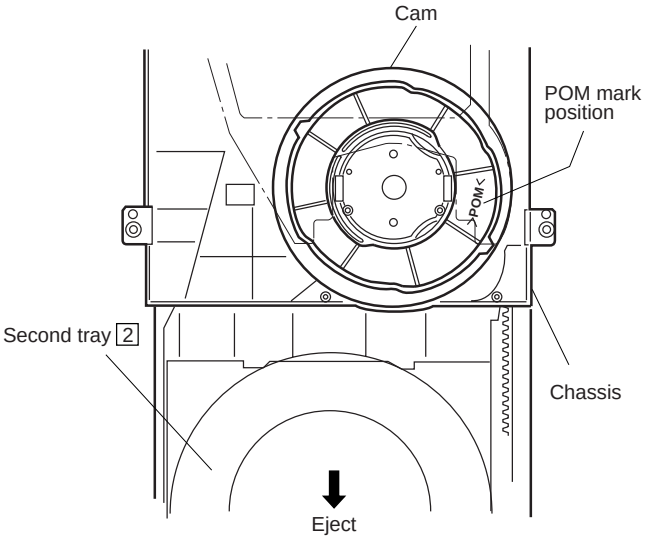


Fig. 2-1-14

2. Solder the terminals of the loading motor (3) on the loading motor PC board (4) .
3. Since the switch of SW3 comes over the external peripheral portion of the cam, push the switch by inserting a spacer to the clearance between the chassis and the loading motor PC board (4). (Refer to Fig. A.)
4. With the loading motor PC board (4) held, tighten two screws (2)-1 on the loading motor (3) side and then fix two screws (2)-2.
5. Tighten two screws (1).
6. Mount the loading belt.
7. Close the second tray 2.

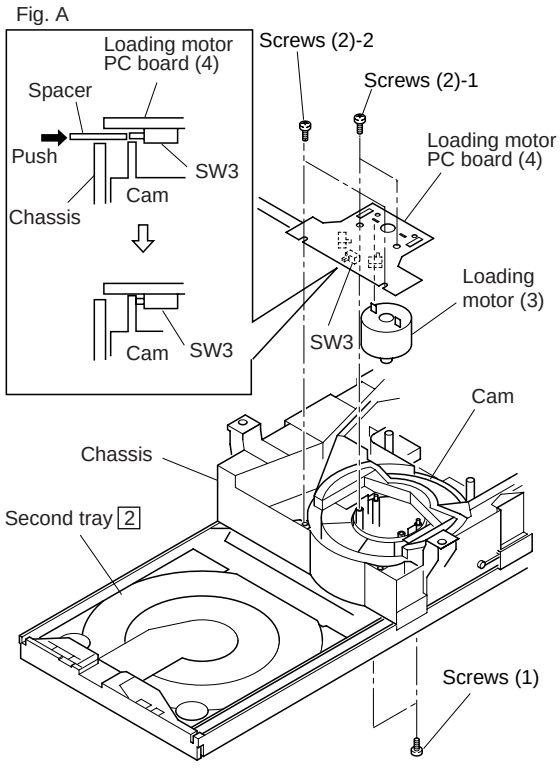


Fig. 2-1-15

1-3-4. Pickup Mechanism Assembly

<Removal>

1. Turn over the mechanism chassis assembly (1).
2. Remove the flexible cables (2) at two locations.
3. Remove four screws (3) and remove the pickup mechanism assembly (4).

<Mounting>

1. Replace the pickup mechanism assembly (4) with a new one.

   Remove dampers from the old pickup mechanism assembly used and mount the dampers on the new pickup mechanism assembly.
2. When mounting, perform the reverse steps of the removal described above.

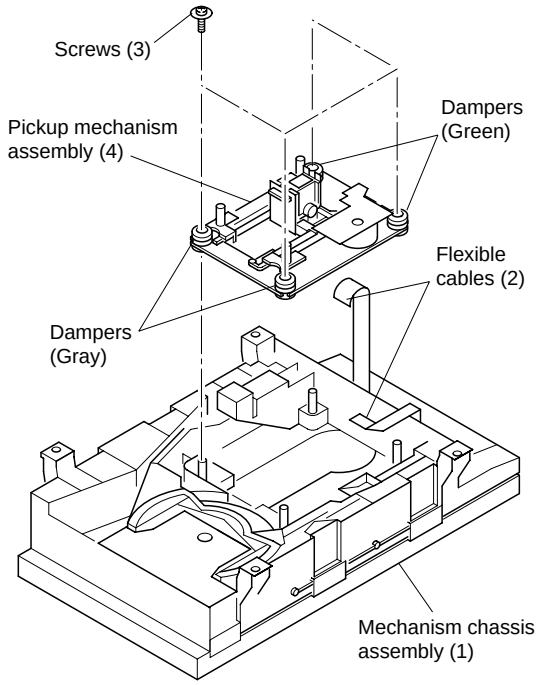


Fig. 2-1-16

Note:

- The dampers' color differs when used for the front side and the rear.
- When mounting the pickup mechanism assembly (4) with the screws (3), push the pickup mechanism assembly (4) downward without being caught and tighten the screws (3) after placing the washer with the damper bent.

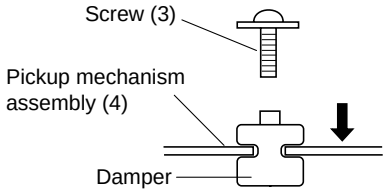


Fig. 2-1-17

1-3-5. Gear B Assembly, Gear A and Rack Gear Assembly

<Removal>

1. Remove one screw (1) and remove the gear B assembly (2).
2. Remove the gear A (3).
3. Remove one screw (4) and remove the rack gear assembly (5).

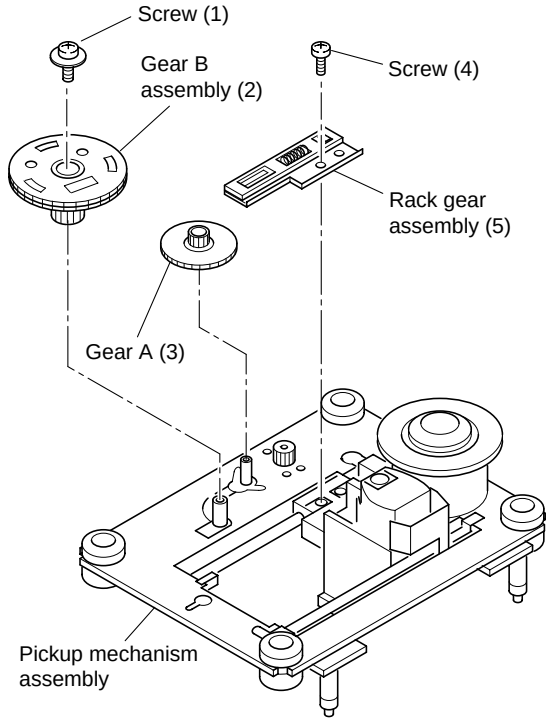


Fig. 2-1-18

<Mounting>

1. When mounting, perform the reverse order of the removal.
2. Mount the gear B assembly (1) by pushing the pickup head (5) to the disc motor side (arrow A direction) and shifting the upper gear of the rack gear assembly (4) in the arrow B direction. (Refer to Fig. 2-1-19.)
3. Fit the positioning holes on the upper gear and lower gear of the gear B assembly (1) and mount on the pickup mechanism assembly with the phase matched.

   At this time, note that the phase of the gear B assembly (1) and the gear A (2) shows the status in the Fig. 2-1-20.

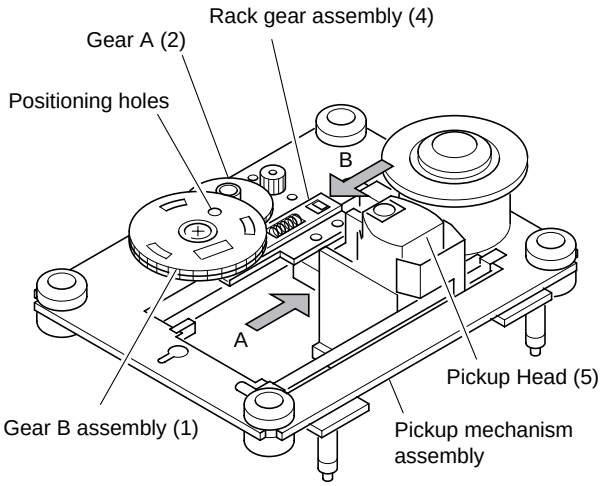


Fig. 2-1-19

Note:

- Mount the gear B assembly (1) and the gear A (2) with their gear teeth placed more than one tooth at least inside the shaded portion.

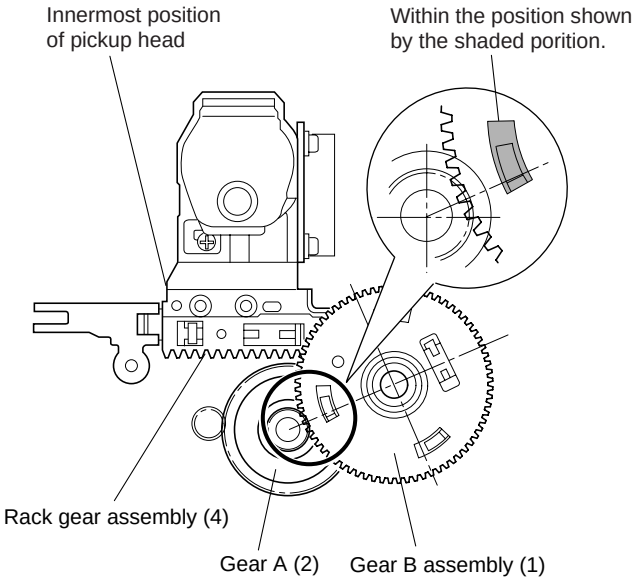

Innermost position of pickup head
Within the position shown by the shaded porition.
Rack gear assembly (4)
Gear A (2)
Gear B assembly (1)

Fig. 2-1-20

1-3-6. Feed Motor

<Removal>

1. Remove the gear B assembly (1) and the gear A (2). (Refer to item 1-3-5.)
2. Remove two screws (1) and remove the feed motor (2) (with the feed motor PC board (3) attached). (Refer to Fig. 2-1-21.)
3. Desolder the terminals of the feed motor (2) and remove the feed motor PC board (3).

<Mounting>

1. Tighten the feed motor (2) on the pickup mechanism assembly with two screws (1).
2. Insert the feed motor PC board (3) with the positioning pin on the chassis matched and solder the terminals.
3. Perform the reverse order of the removal.

Note:

- After mounting, put the lead wires through the notch of the pickup mechanism assembly.

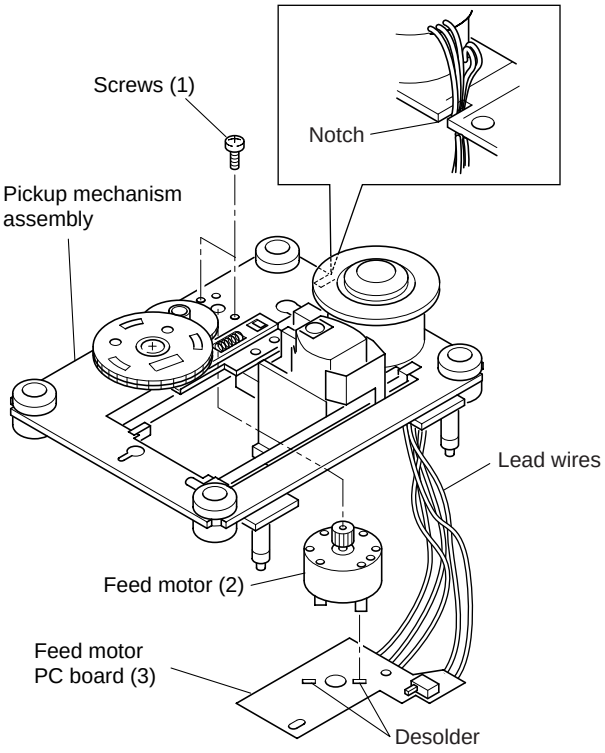


Fig. 2-1-21

1-4. Tray Replacement

Note:

- Perform this service only when a defective with a disc not ejected, etc. occurs.

1-4-1. Tray Removal

1. Remove the mechanism chassis assembly. (Refer to item 1-3-1.)
2. Turn the gear (2) clockwise to eject the tray (1).
3. Pull out the tray (1) to this side until it stops.
4. Release the claws on the right side of the mechanism chassis assembly (part A) and pull out the tray (1) with it obliquely lifted up.

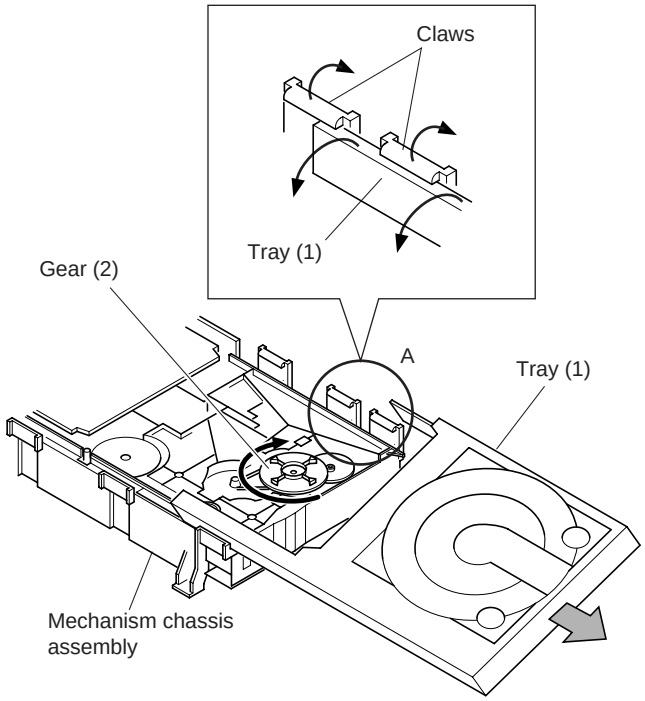


Fig. 2-1-22

<The First Tray 1 Removal>

1. Slide the tray marked 1 in the arrow direction, then remove it from two bosses.

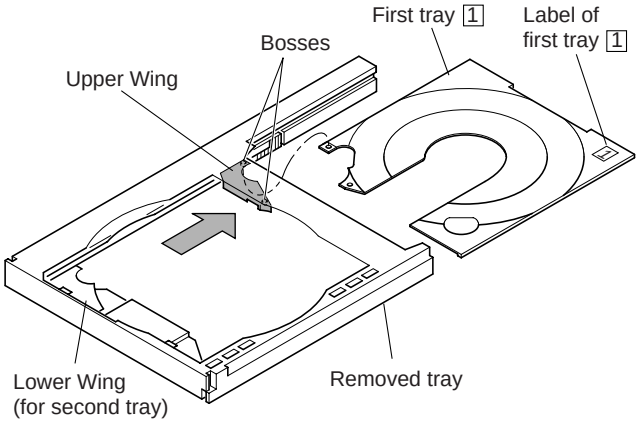


Fig. 2-1-23

<The Second Tray 2 Removal>

1. Turning the gear counterclockwise ascends the tray. Pull out the second tray marked 2.

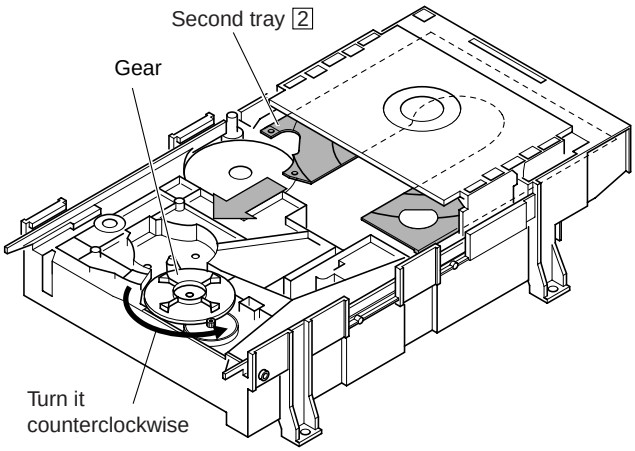


Fig. 2-1-24

1-4-2. Tray Mounting

<The First Tray 1 Mounting>

1. Mount the first tray 1 by fitting to the bosses at two locations after sliding the upper wing to the inner side.
2. Slide the first tray 1 to front side (arrow A direction) until it stops.

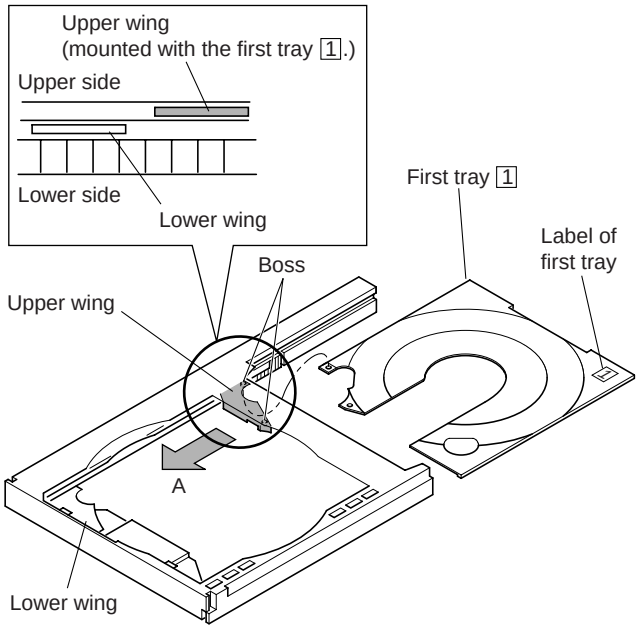


Fig. 2-1-25

<The Second Tray 2 Mounting>

1. Insert the second tray 2 along the lower groove.
2. Turn the gear clockwise until it stops and descend the tray.

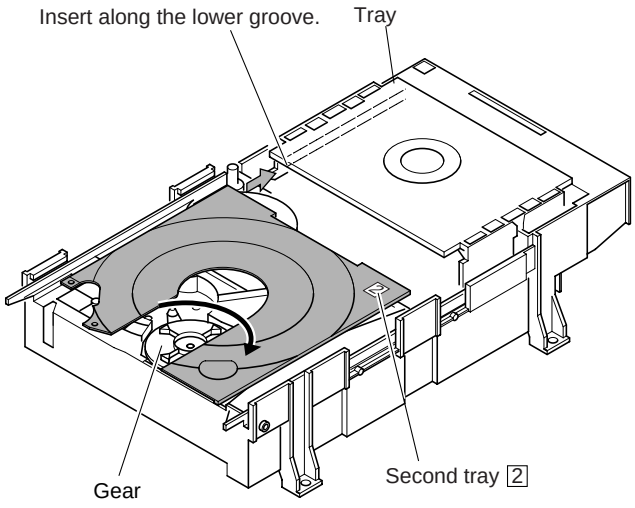


Fig. 2-1-26

<Tray mounting>

1. Remove the gear (1).
2. Insert the tray (2) horizontally.
3. Set the gear (1) to fit the rack gear of the tray.
4. Insert the tray (2) to the inner side until it stops.
5. Turn the gear (3) to confirm the movement.

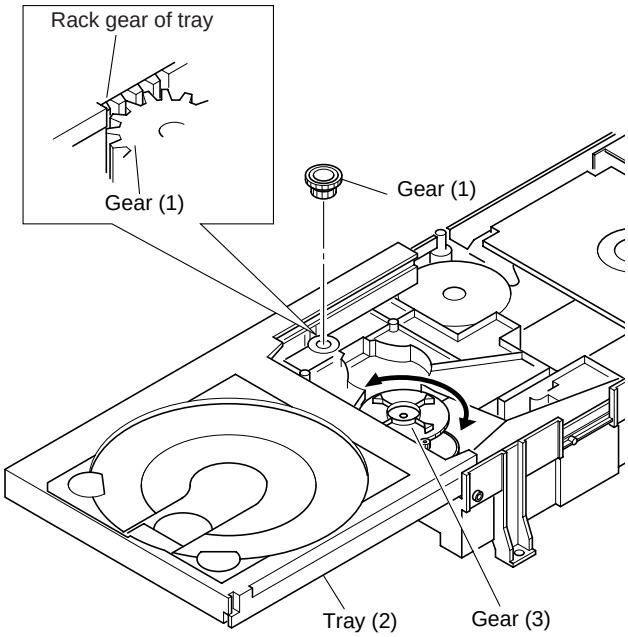


Fig. 2-1-27

SECTION 3
SERVICING DIAGRAMS

1. STANDING PC BOARDS FOR SERVICING

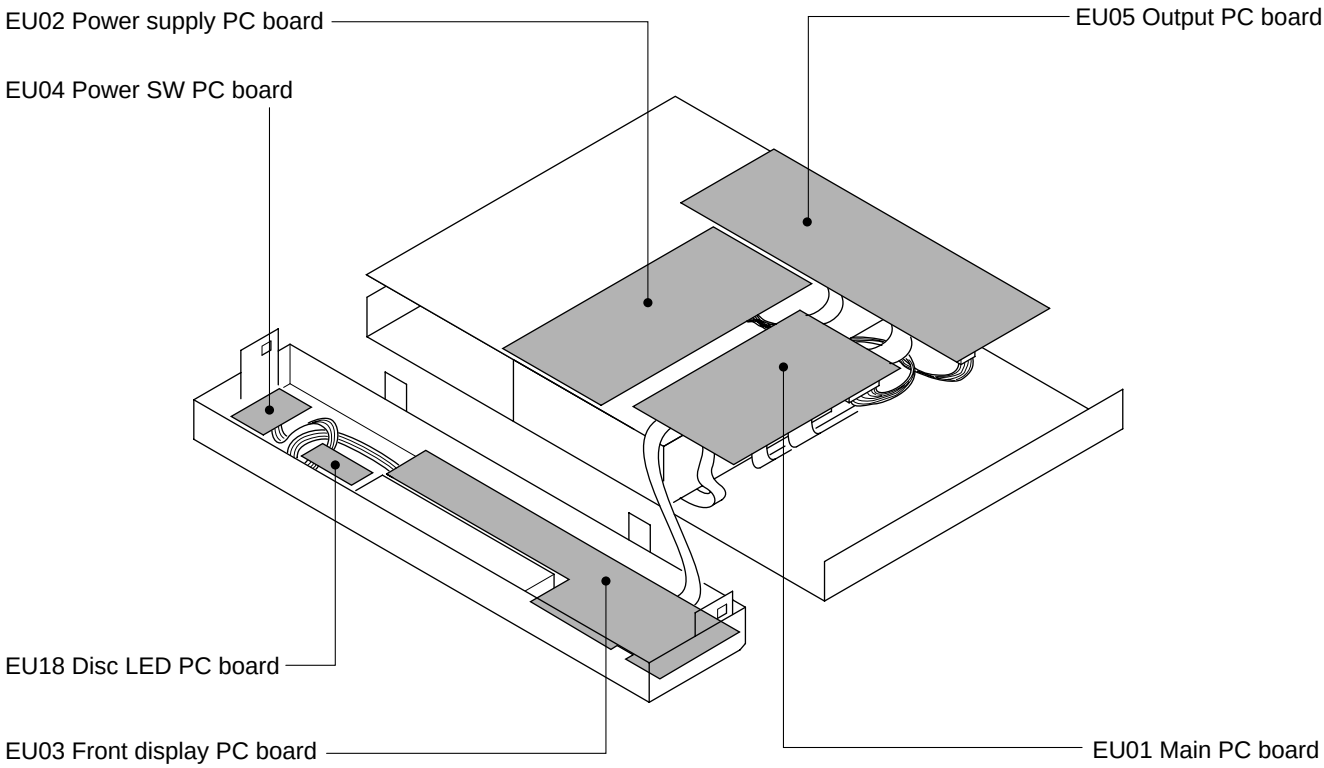

EU02 Power supply PC board
EU05 Output PC board
EU04 Power SW PC board
EU18 Disc LED PC board
EU03 Front display PC board
EU01 Main PC board

Fig. 3-1-1

2. CIRCUIT SYMBOLS AND SUPPLEMENTARY EXPLANATION

2-1. Precautions for Part Replacement

- In the schematic diagram, parts marked ⚠ (ex. ⚠ F801) are critical part to meet the safety regulations, so always use the parts bearing specified part codes (SN) when replacing them.
- Using the parts other than those specified shall violate the regulations, and may cause troubles such as operation failures, fire etc.

2-2. Solid Resistor Indication

Unit	None .....Ω K .....kΩ M .....MΩ
Tolerance	None .....±5% B .....±0.1% C .....±0.25% D .....±0.5% F .....±1% G .....±2% K .....±10% M .....±20%
Rated Wattage	(1) Chip Parts None .....1/16W (2) Other Parts None .....1/6W Other than above, described in the Circuit Diagram.
Type	None .....Carbon film S .....Solid R .....Oxide metal film W .....Metal film W .....Cement FR .....Fusible

Eg. 1

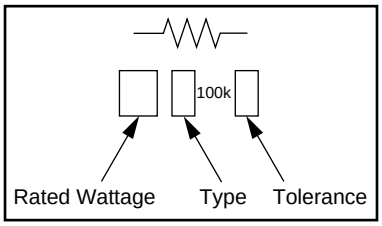


FIg. 3-2-1

2-3. Capacitance Indication

Symbol	.....Electrolytic, Special electrolytic NP .....Non polarity electrolytic .....Ceramic, plastic M .....Film .....Trimmer
Unit	None .....F μ .....μF p .....pF
Rated voltage	None .....50V For other than 50V and electrolytic capacitors, described in the Circuit Diagram.
Tolerance	(1) Ceramic, plastic, and film capacitors of which capacitance are more than 10 pF. None .....±5% or more B .....±0.1% C .....±0.25% D .....±0.5% F .....±1% G .....±2% (2) Ceramic, plastic, and film capacitors of which capacitance are 10 pF or less. None .....more than ±5% pF B .....±0.1 pF C .....±0.25 pF (3) Electrolytic, Trimmer Tolerance is not described.
Temperature characteristic (Ceramic capacitor)	None .....SL For others, temperature characteristics are described. (For capacitors of 0.01 μF and no indications are described as F.)
Static electricity capacity (Ceramic capacitor)	Sometimes described with abbreviated letters as shown in Eg. 3.

Eg. 2

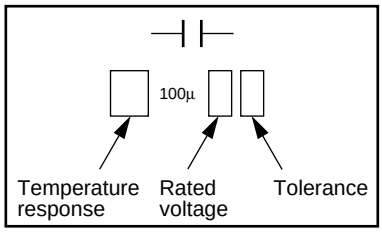


Fig. 3-2-2

Eg. 3

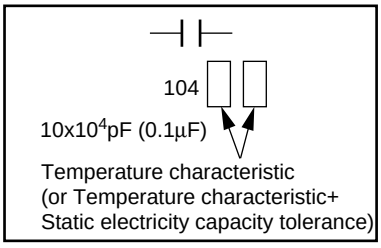


Fig. 3-2-3

2-4. Inductor Indication

Unit	None ..... H µ ..... µH m ..... mH
Tolerance	None ..... ±5% B ..... ±0.1% C ..... ±0.25% D ..... ±0.5% F ..... ±1% G ..... ±2% K ..... ±10% M ..... ±20%

Eg. 4

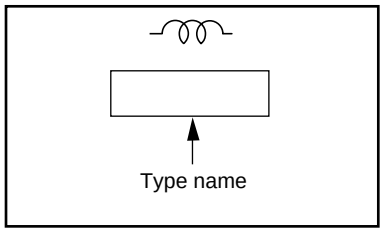


Fig. 3-2-4

2-5. Waveform and Voltage Measurement

- The waveforms for CD/DVD and RF shown in the circuit diagrams are obtained when a test disc is played back.
- All voltage values except the waveforms are expressed in DC and measured by a digital voltmeter.

Eg. 5

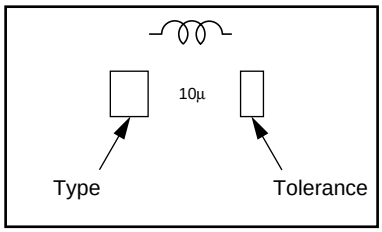


Fig. 3-2-5

2-6. When Replaced ROM ICs or Upgraded Firmware

1. When replaced the following ROM ICs, it is necessary to write the data into the new ICs.
   1) IC615 (firmware)
   2) IC613 (Setup default data and other information)
2. When the firmware is upgraded, rewriting the new firmware into IC615 may be requested for servicing.
3. Connect a computer to the main PC board of the DVD video player with using DATA UPDATE KIT (P/No. 79080074). (Fig. 3-2-6)
4. Writing operation

   Refer to the instruction attached to the data floppy disc.

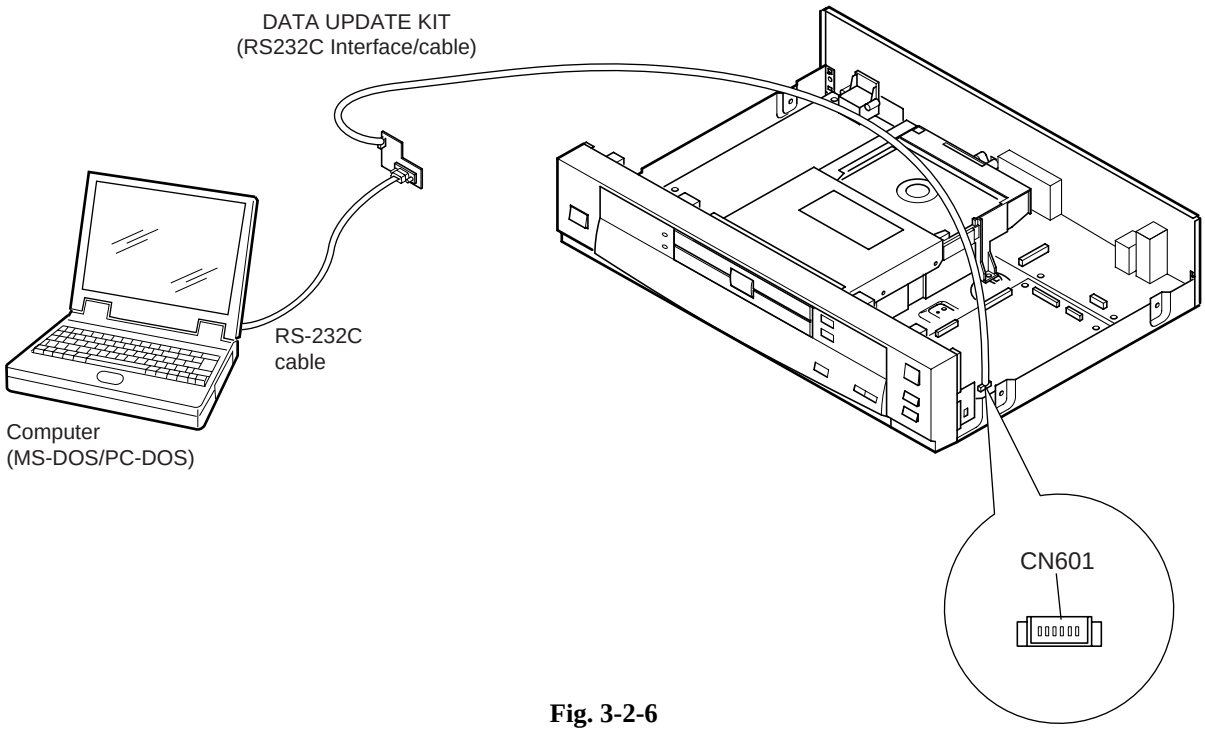


Fig. 3-2-6

Note:

- The firmware and setup data floppy discs are not available as service parts.
  For more information, consult TOSHIBA service office in your area.

3. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

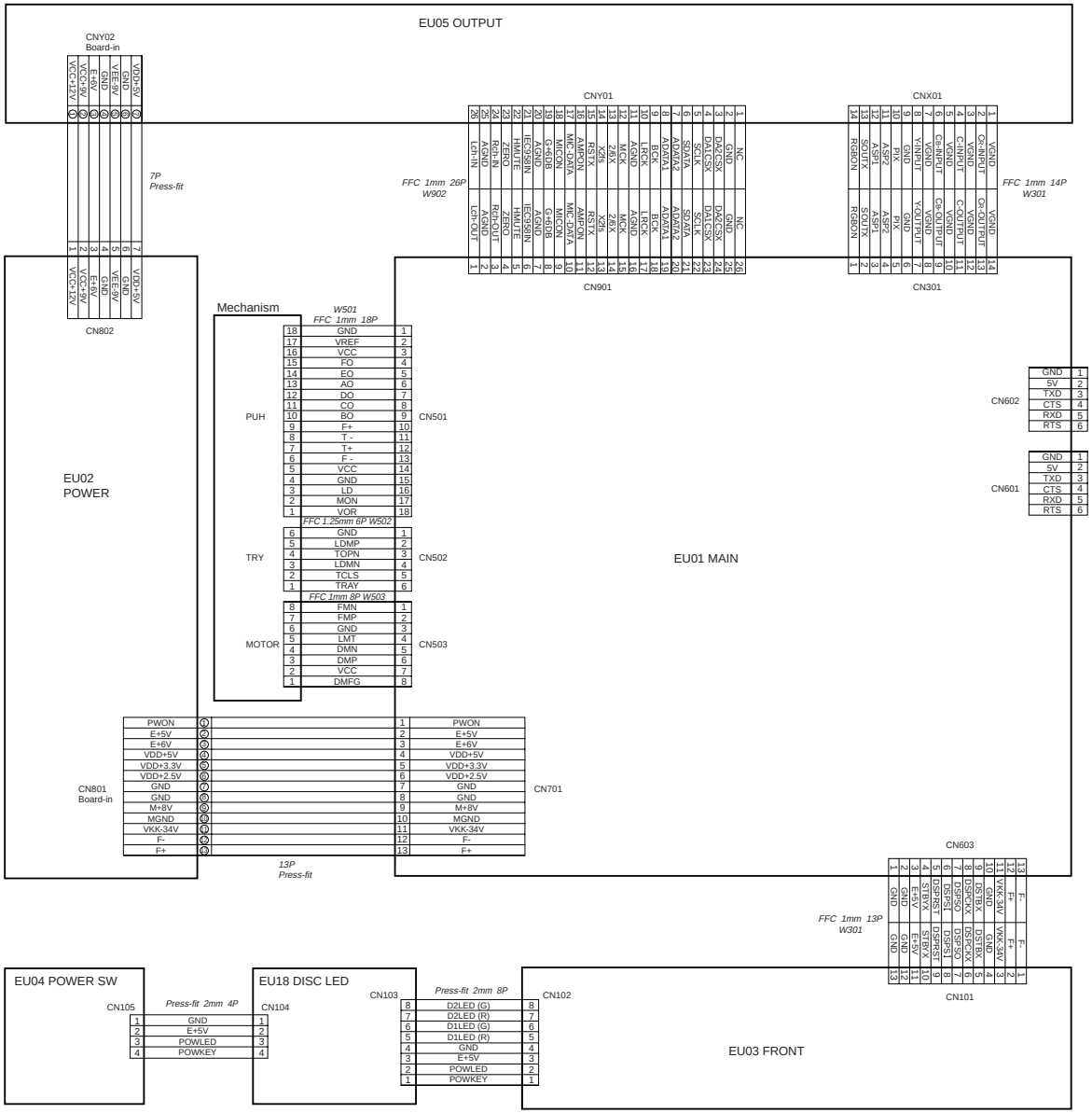


Fig. 3-3-1

4. BLOCK DIAGRAMS

4-1. Overall Block Diagram

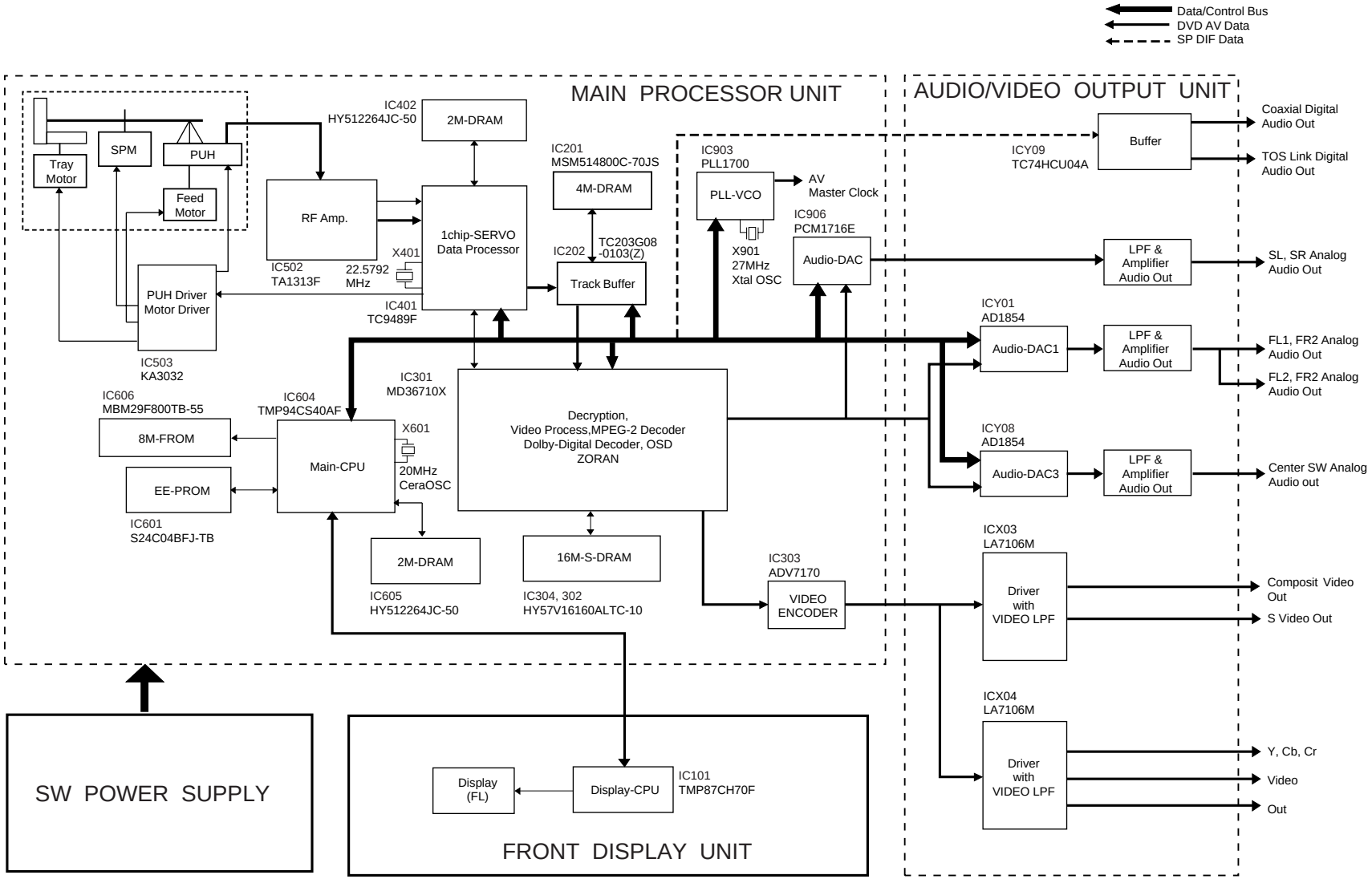


Fig.3-4-1

4-2. Power Supply Block Diagram

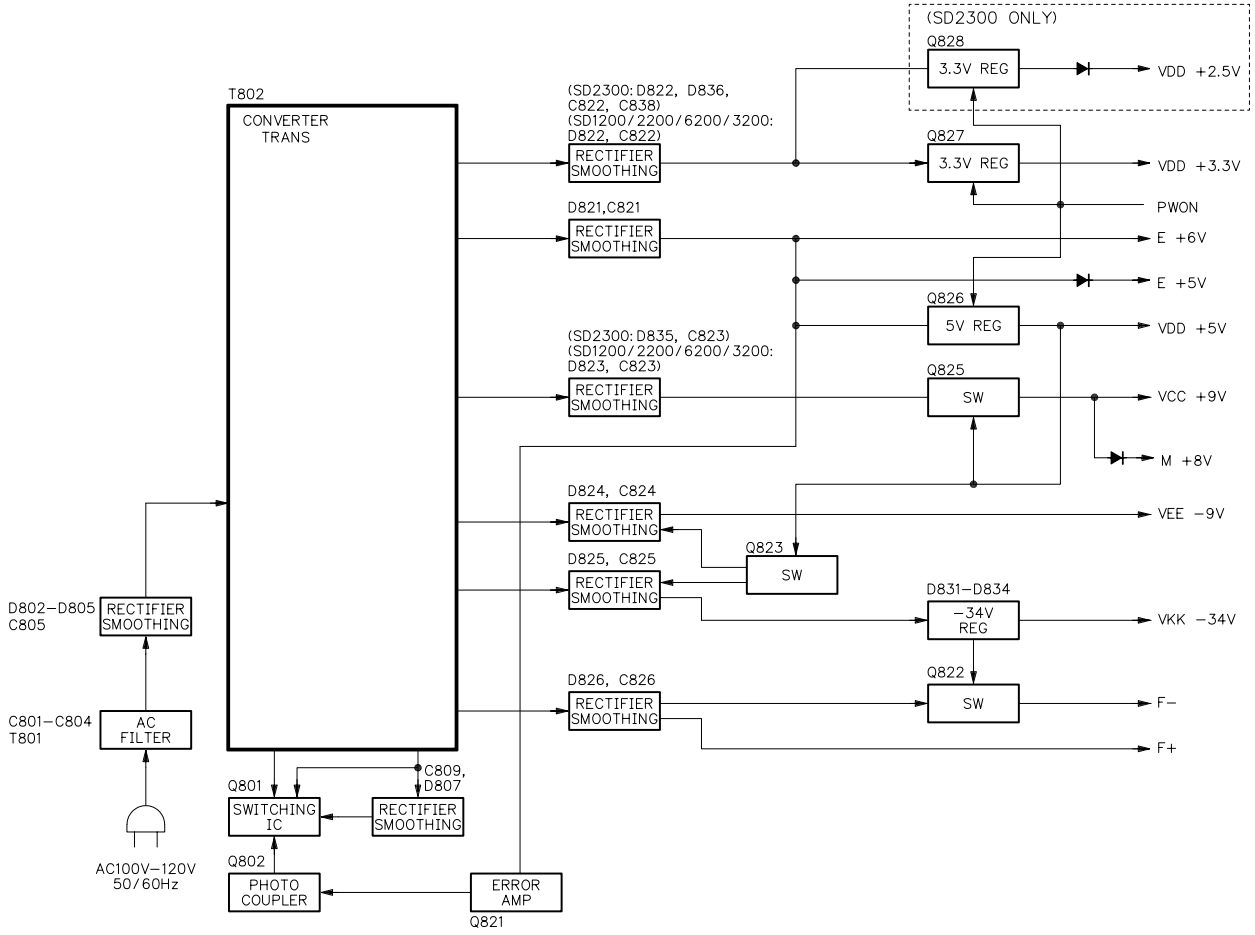


Fig. 3-4-2

4-3. Front Display, Power Switch Block Diagram

4-3-1. Front Display

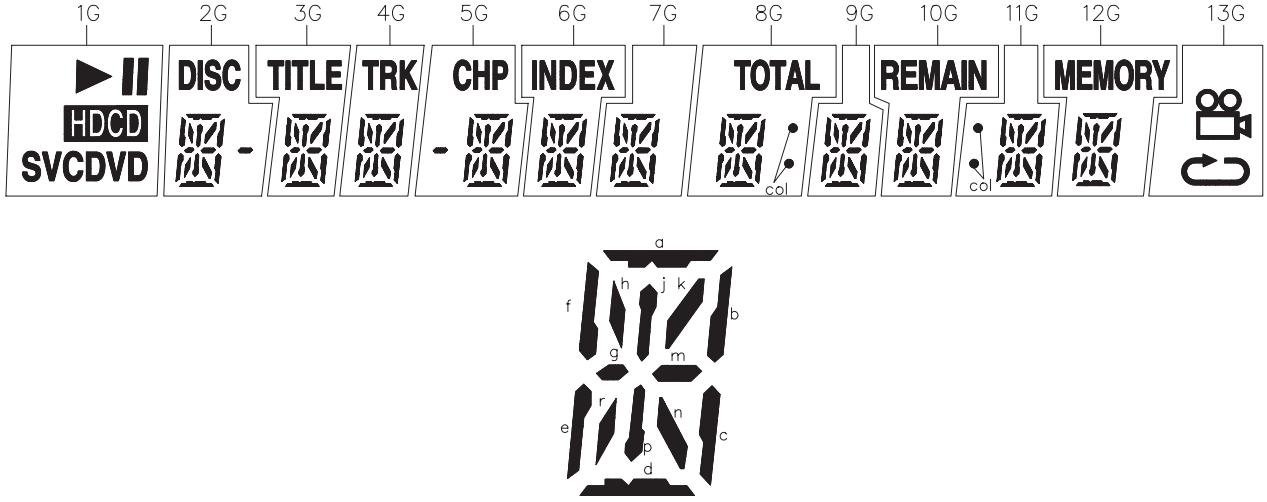


Fig. 3-4-3

4-3-2. Front Display Pattern

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G
P1	▶	a	a	a	a	a	a	a	a	a	a	a	—
P2	II	b	b	b	b	b	b	b	b	b	b	b	—
P3	V	c	c	c	c	c	c	c	c	c	c	c	—
P4	C	d	d	d	d	d	d	d	d	d	d	d	—
P5	D	e	e	e	e	e	e	e	e	e	e	e	—
P6	VD	f	f	f	f	f	f	f	f	f	f	f	—
P7	S	g	g	g	g	g	g	g	g	g	g	g	—
P8	HDCD	h	h	h	h	h	h	h	h	h	h	h	—
P9	—	j	j	j	j	j	j	j	j	j	j	j	📹
P10	—	k	k	k	k	k	k	k	k	k	k	k	↻
P11	—	m	m	m	m	m	m	m	m	m	m	m	—
P12	—	n	n	n	n	n	n	n	n	n	n	n	—
P13	—	p	p	p	p	p	p	p	p	p	p	p	—
P14	—	r	r	r	r	r	r	r	r	r	r	r	—
P15	—	-	—	—	-	—	—	col	—	—	col	—	—
P16	—	DISC	TITLE	TRK	CHP	INDEX	—	TOTAL	—	REMAIN	—	MEMORY	—

Fig. 3-4-4

4-3-3. Front Display, Power Switch Block Diagram

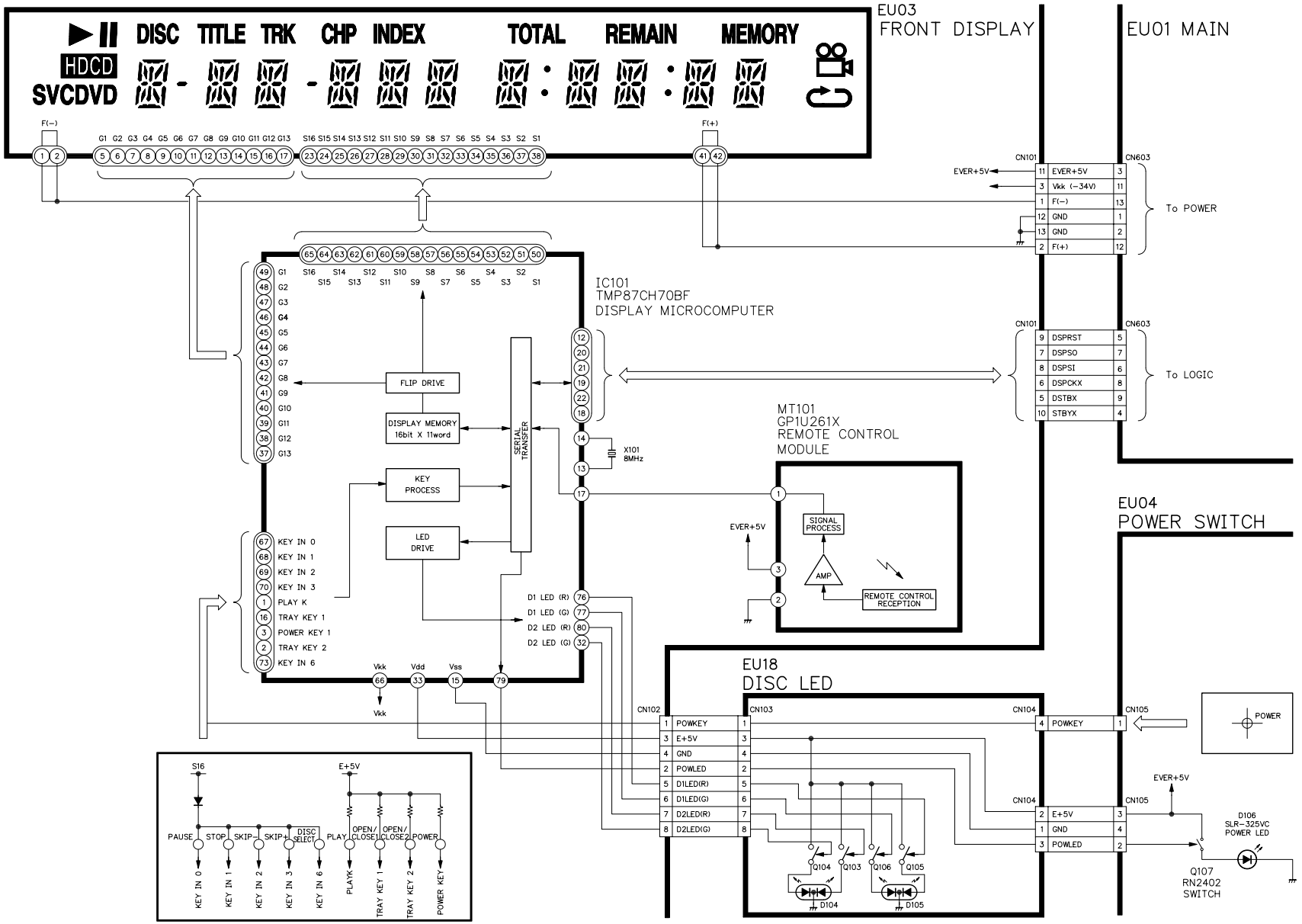


Fig. 3-4-5

4-4. Main Block Diagrams

4-4-1. Servo System Block Diagram

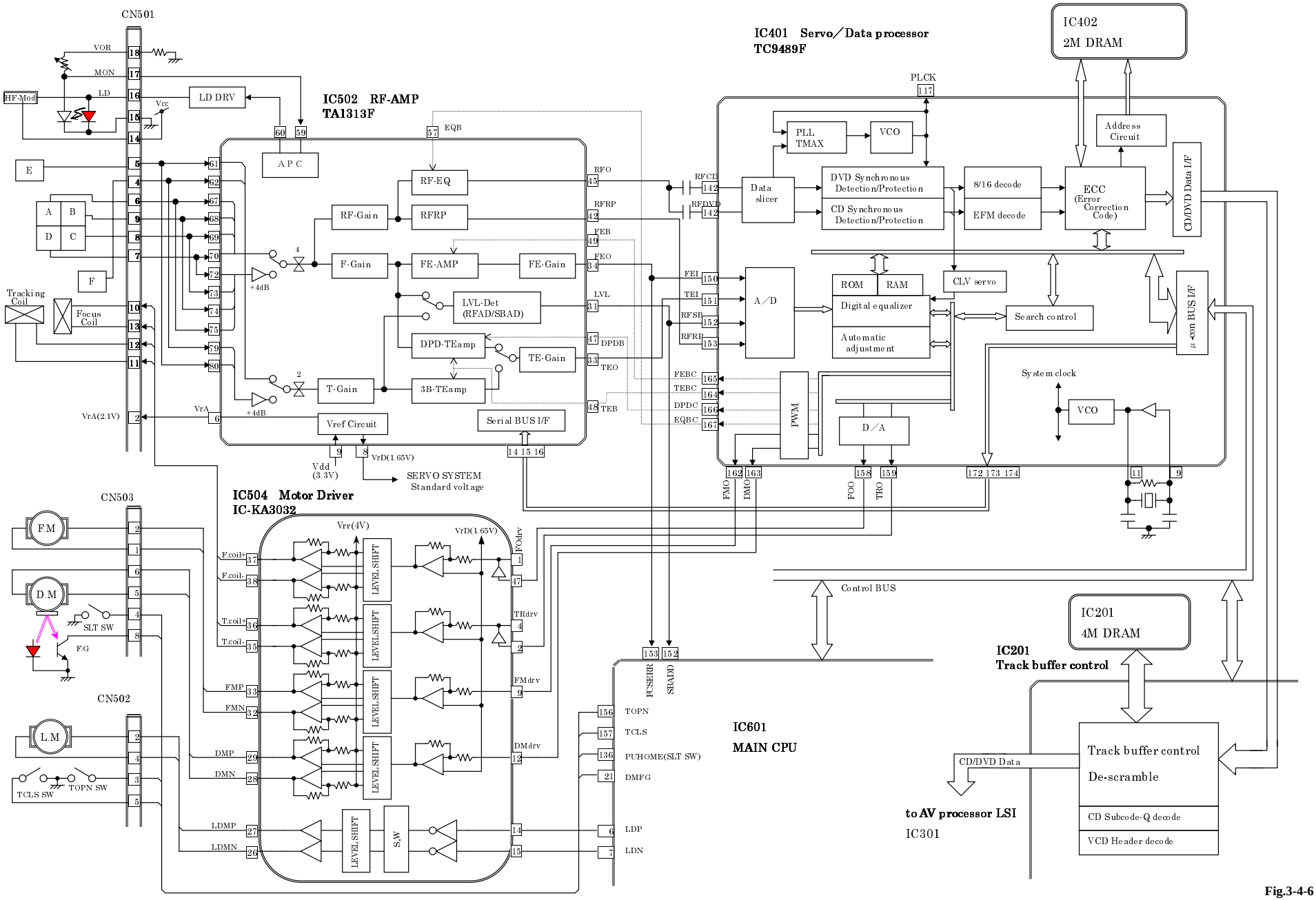


Fig.3-4-6

4-4-2. Logical System Block Diagram

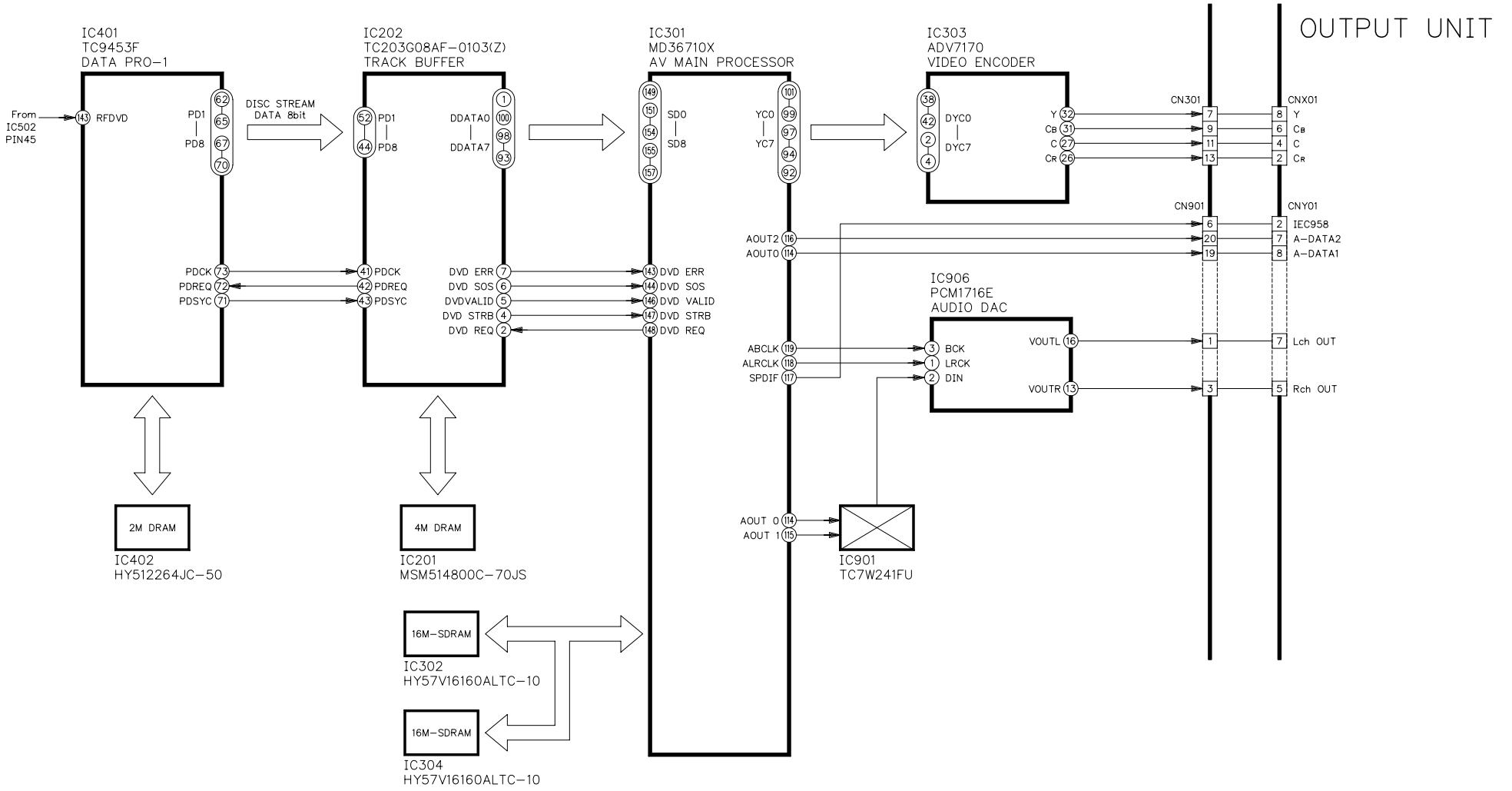


Fig. 3-4-7

4-5. Output Block Diagram

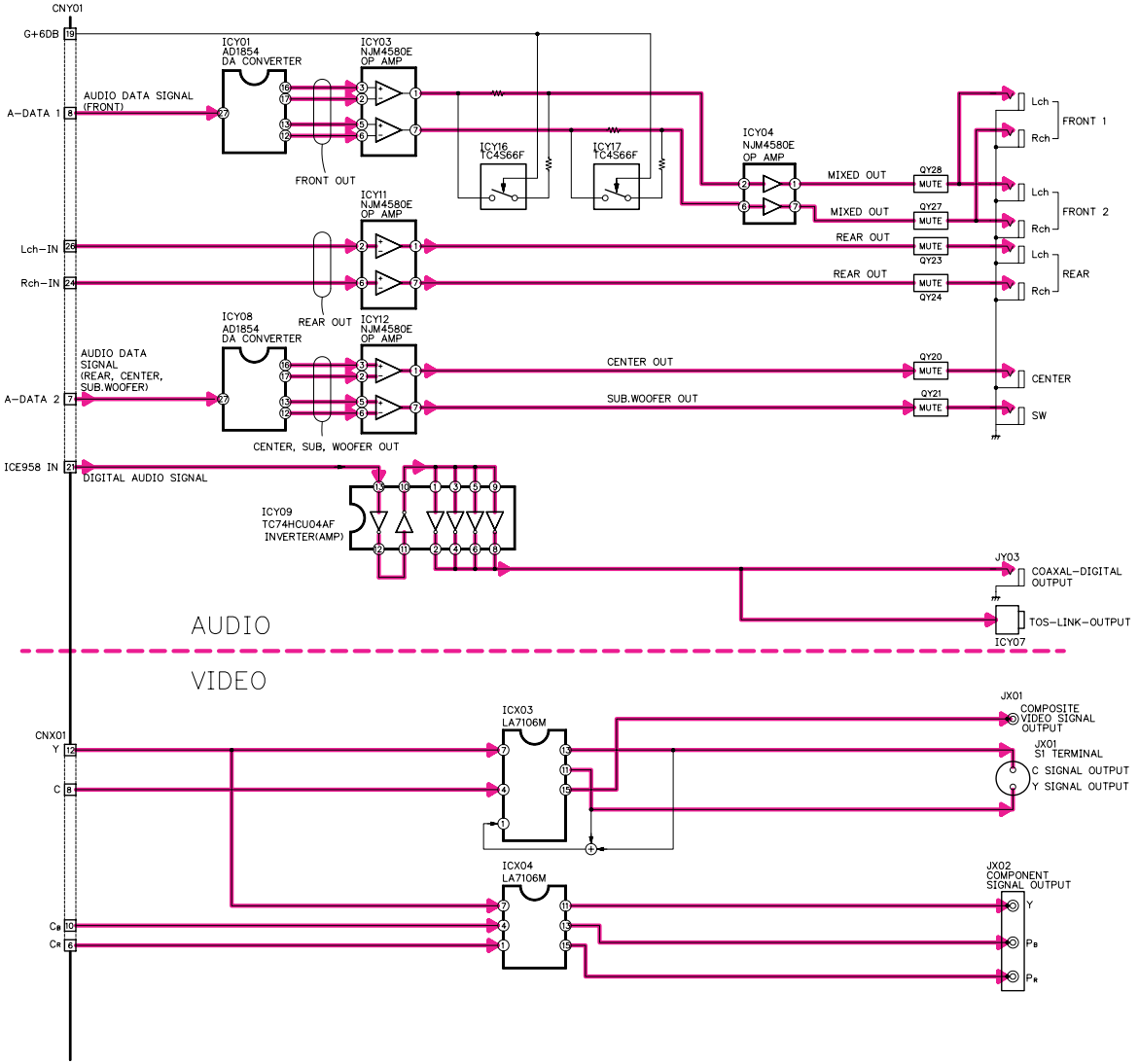


Fig. 3-4-8

5. CIRCUIT DIAGRAMS

5-1. Power Supply Circuit Diagram

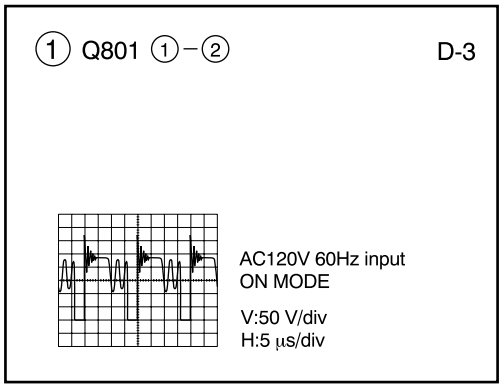
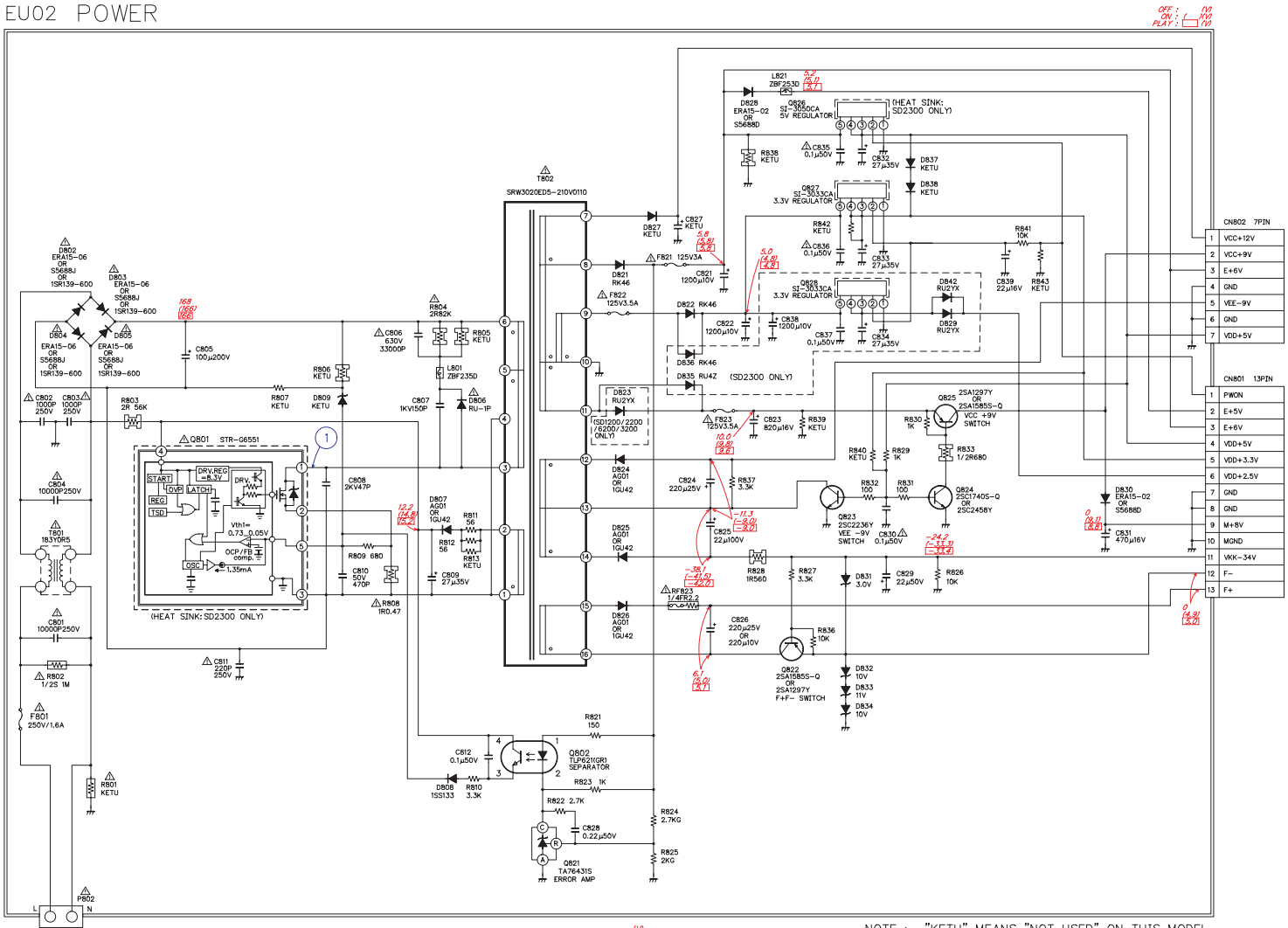


Fig. 3-5-1

Part No.	Location	Part No.	Location	Part No.	Location
C801	E2	D807	D4	Q828	C6
C802	C2	D808	F4	R801	F2
C803	C2	D809	C3	R802	E2
C804	D2	D821	C5	R803	C2
C805	C3	D822	C6	R804	C4
C806	C4	D823	C5	R805	C4
C807	C4	D824	D5	R806	C3
C808	D4	D825	D5	R807	C3
C809	D4	D826	E5	R808	E4
C810	D4	D827	B5	R809	D4
C811	E3	D828	B6	R810	F4
C812	E4	D829	C7	R811	D4
C821	C6	D830	D8	R812	D4
C822	C6	D831	D7	R813	D4
C823	C6	D832	E7	R821	E5
C824	D6	D833	E7	R822	F5
C825	D6	D834	E7	R823	F5
C826	E6	D835	C6	R824	F5
C827	B6	D836	C6	R825	F5
C828	F5	D837	B7	R826	D7
C829	D7	D838	B7	R827	D6
C830	D7	D842	C7	R828	D6
C831	D8	F801	E2	R829	D7
C832	B7	F821	B5	R830	C7
C833	B7	F822	C5	R831	D7
C834	C7	F823	C6	R832	D7
C835	B6	L801	C4	R833	D7
C836	B6	L821	A6	R836	E6
C837	C6	P802	F2	R837	D6
C838	C6	Q801	D3	R838	B6
C839	C7	Q802	E5	R839	C6
CN801	C9	Q821	F5	R840	D7
CN802	B9	Q822	E6	R841	B7
D802	B2	Q823	D6	R842	B6
D803	C2	Q824	D7	R843	C8
D804	C2	Q825	C7	RF823	D6
D805	C2	Q826	B6	T801	D2
D806	C4	Q827	B6	T802	B5



(V)

	Q821			Q822			Q823			Q824			Q825		
	A	C	R	E	C	B	E	C	B	E	C	B	E	C	B
OFF	0	4.7	2.5	−23.0	−29.0	−23.0	0	12.0	0	0	10.0	0	10.0	0	10.2
ON	0	4.8	2.5	−30.0	−30.0	−31.0	0	0	0.7	0	0	0.7	9.8	9.8	9.1
PLAY	0	4.8	2.5	−30.0	−30.0	−31.0	0	0	0.7	0	0	0.7	9.6	9.6	8.9

(V)

	Q826					Q827				
	1	2	3	4	5	1	2	3	4	5
OFF	0	0	0	0	5.8	0	0	0	0	5.0
ON	0	5.0	5.0	5.0	5.8	0	5.0	3.3	3.3	4.8
PLAY	0	5.0	5.0	5.0	5.8	0	5.0	3.3	3.3	4.8

Fig. 3-5-2

5-2. Front Display, Power Switch Circuit Diagram

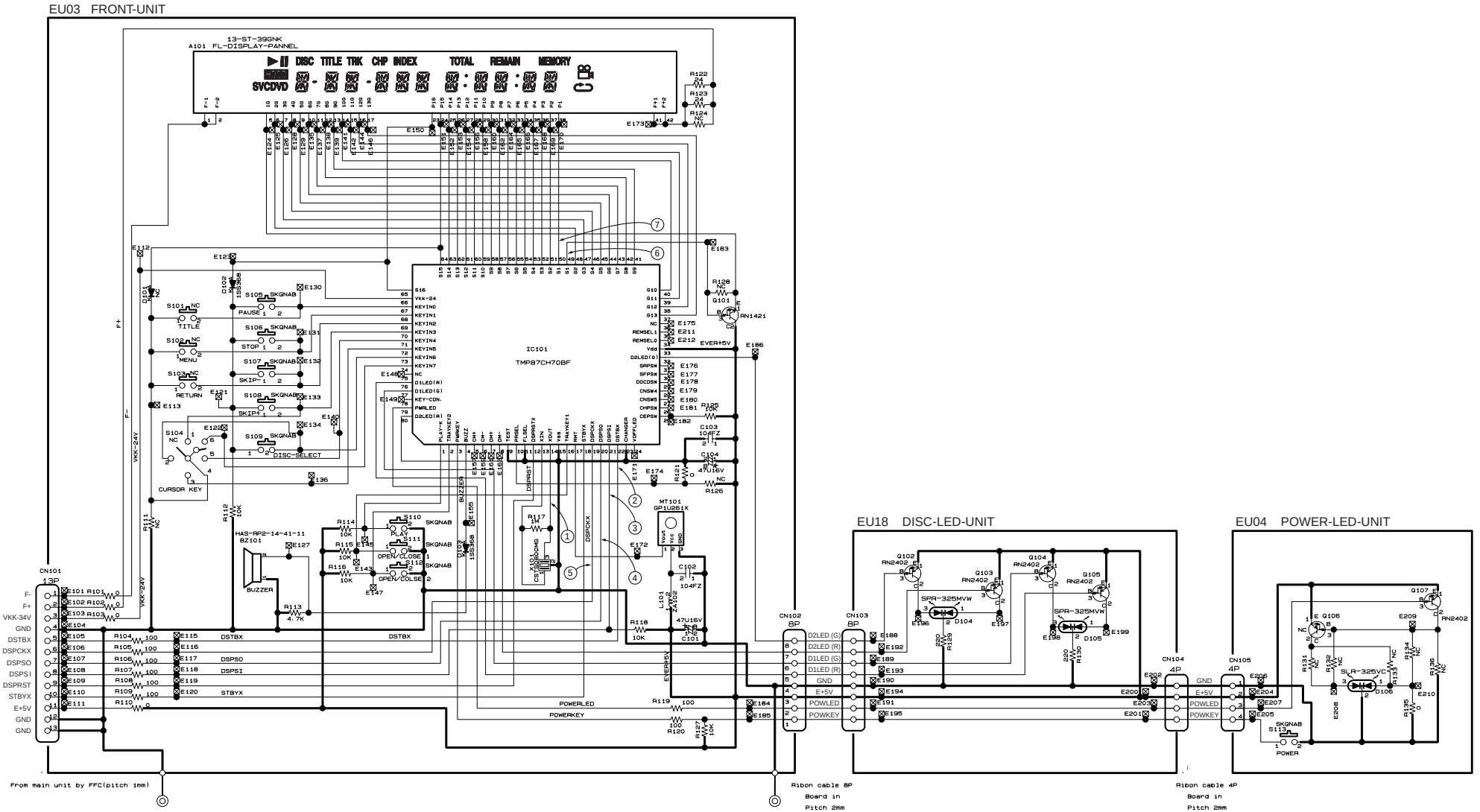


Fig. 3-5-3

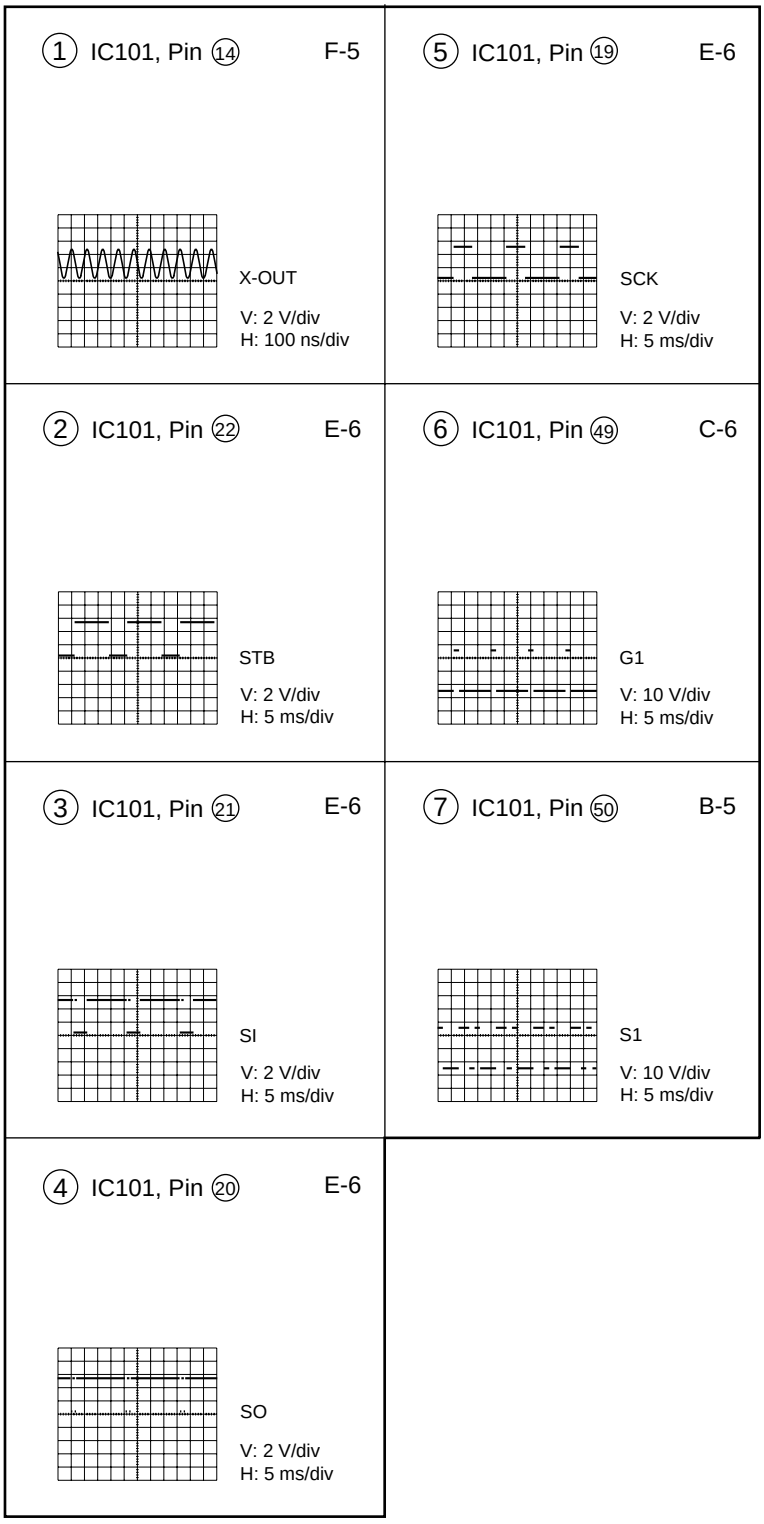


Fig. 3-5-4

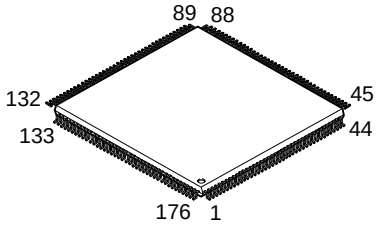
Part No.	Location
A101	A2
BZ101	E3
C101	F5
C102	E5
C103	D6
C104	D6
CN101	E1
CN102	E6
CN103	E6
CN104	F9
CN105	F9
D101	C2
D102	C2
D103	E4
D104	E7
D105	F8
D105	F10
E101	E1
E102	E1
E103	E1
E104	F1
E105	F1
E106	F1
E107	F1
E108	F1
E109	F1
E110	F1
E111	F1
E112	C2
E113	D2
E115	F2
E116	F2
E117	F2
E118	F2
E119	F2
E120	F2
E121	D2
E122	D2
E123	C2
E124	B3
E125	B3
E126	B3
E127	E3
E128	B3
E129	B3
E130	C3
E131	C3
E132	D3
E133	D3
E134	D3
E135	B3
E136	E3
E137	B3
E138	B3
E139	B3
E140	D3
E141	B3
E142	B3
E143	E3
E144	B3
E145	E3
E146	B3
E147	E3
E148	D3
E149	D3
E150	B4
E151	B4
E152	B4
E153	B4
E154	B4
E155	E4
E156	B4
E157	D4
E158	B4
E159	D4
E160	B4
E161	D4
E162	B4
E163	D4
E164	B4
E165	B4
E166	B4
E167	B4
E168	B4
E169	B4
E170	B5
E171	D5
E172	E5
E173	B5
E174	D5
E175	C5
E176	D5
E177	D5

Part No.	Location
E178	D5
E179	D5
E180	D5
E181	D5
E182	D5
E183	C6
E184	F6
E185	F6
E186	D6
E188	F7
E189	F7
E190	F7
E191	F7
E192	F7
E193	F7
E194	F7
E195	F7
E196	E7
E197	E7
E198	F8
E199	F8
E200	F8
E201	F8
E202	F9
E203	F8
E204	F9
E205	F9
E206	F9
E207	F9
E208	F10
E209	E10
E210	F10
E211	C5
E212	D5
IC101	D4
L101	E5
MT101	E5
Q101	C6
Q102	E7
Q103	E7
Q104	E8
Q105	E8
Q106	E10
Q107	E10
R101	E1
R102	E1
R103	E1
R104	F2
R105	F2
R106	F2
R107	F2
R108	F2
R109	F2
R110	F2
R111	E2
R112	E2
R113	E3
R114	E3
R115	E3
R116	E3
R117	E4
R118	F5
R119	F5
R120	F5
R121	D5
R122	B5
R123	B5
R124	B5
R125	D6
R126	E6
R127	F5
R128	C6
R129	F7
R130	F8
R131	F9
R132	F10
R133	F10
R134	F10
R135	F10
R136	F10
S101	C2
S102	D2
S103	D2
S104	D2
S105	C3
S106	C3
S107	D3
S108	D3
S109	D3
S110	E4
S111	E4
S112	E4
S113	F9
X101	E4

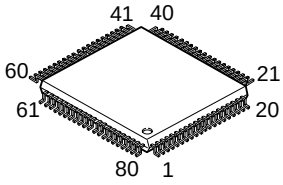
5-3. Main Circuit Diagrams

5-3-1. New Main ICs Information

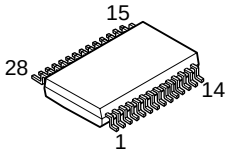
TC9489F



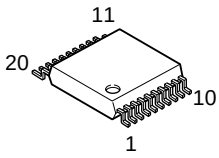
TA1313F



PCM1716-E



PLL1700E



Main ICs Function

Table 3-5-1

Ref. No.	IC Name	Function	Detail
IC601	S24C04BFJ-TB	EE-PROM	Setup default, memorization of specification setting.
IC303	ADV7170	Video Encorder	Built-in D/A converter. Encodes digital video signal to analog video signal of NTSC/PAL system.
IC301	MD36710X	AV Decorder	Decryption, MPEG-2 Decode, Audio Decode, Sub Picture Decode, OSD.
IC401	TC9489F	SERVO & Data Processor	Performs servo control of DVD or CD, and performs demodulation and correction of RF signal.
IC502	TA1313T	RF Signal processing IC	Equalizes of playback RF signal and generates error detection signal required for each servo operation.
IC503	KA3032	5-CH Motor Driver	5ch driver for motor driving.
IC906	PCM1716E	DA Converter	Stereo audio DA converter with a dual PPL built-in.
IC604	TMP94CS40AF	Main Micro Processor	Performs system control for all circuits.
IC202	TC203G08F0103	Track Buffer	Rate control and Buffer control.
IC606	MBM29F800TB-55	Flash ROM	Memorization for firmware.

Table 3-5-2 PCM1716E-T

Pin No.	Name	Function
1	LRCIN	Left and Right Clock Input. This clock is equal to the sampling rate - f_S.(1)
2	DIN	Serial Audio Data Input.(1)
3	BCKIN	Bit Clock Input for Serial Audio Data.(1)
4	CLKO	Buffered Output of Oscillator. Equivalent to System Clock.
5	XTI	Oscillator Input (External Clock Input)
6	XTO	Oscillator Output
7	DGND	Digital Ground
8	V_{DD}	Digital Power +5V
9	V_{CC}2R	Analog Power +5V
10	AGND2R	Analog Ground
11	EXTR	Rch, Common Pin of Analog Output Amp
12	NC	No Connection
13	V_{OUT}R	Rch, Analog Voltage Output of Audio Signal
14	AGND1	Analog Ground
15	V_{CC}1	Analog Power +5V
16	V_{OUT}L	Lch, Analog Voltage Output of Audio Signal
17	NC	No Connection
18	EXTL	Lch, Common Pin of Analog Output Amp
19	AGND2L	Analog Ground
20	V_{CC}2L	Analog Power +5V
21	ZERO	Zero Data Flag
22	$\overline{RST}$	Reset. When this pin is low, the DF and modulators are held in reset.(2)
23	$\overline{CS}$/IWO	Chip Select/Input Format Selection. When this pin is low, the Mode Control is effective.(3)
24	MODE	Mode Control Select. (H: Software, L: Hardware)(2)
25	$\overline{MUTE}$	Mute Control.
26	MD/DM0	Mode Control, DATA/De-emphasis Selection 1(2)
27	MC/DM1	Mode Control, BCK/De-emphasis Selection 2(2)
28	ML/I^2S	Mode Control, WDCK/Input Format Selection(2)

Notes: (1) Pins 1,2,3; Schmitt Trigger input
(2) Pins 22,24,25,26,27,28; Schmitt Trigger input with pull-up resistor.
(3) Pin 23; Schmitt Trigger input with pull-down resistor.

Table 3-5-3 PLL1700E-T

Pin No.	Name	Function
1	ML/SR0	Latch Enable for Software Mode/Sampling Rate Selection for Hardware Mode. When MODE pin is LOW, ML is selected. (1)
2	MODE	Mode Control Select. When this pin is HIGH, device is operated in hardware mode using SR0 (pin 1), FS0 (pin 19), and FS1 (pin 20). When this pin is LOW, device is operated in software mode by three-wire interface using ML (pin 1), MD (pin 19) and MC (pin 20).(1)
3	V_{DD}	Digital Power Supply. +5V.
4	GND	Digital Ground.
5	XT2	27MHz Crystal. When an external 27MHz clock is applied to XT1 (pin 6), this pin must be connected to GND.
6	XT1	27MHz Oscillator Input/External 27MHz input.
7	GNDP	Ground for PLL.
8	V_{DDP}	Power Supply for PLL +5V.
9	RSV	Reserved. Must be left open.
10	MCKO	27MHz Output.
11	MCKO	Inverted 27MHz Output.
12	SCKO1	Fixed 33.8688MHz Clock Output.
13	SCKO4	768/f_S Clock Output.
14	SCKO2	256/f_S Clock Output.
15	GNDB	Digital Ground for V_{DC8}
16	V_{DC8}	Digital Power Supply for Clock Output Buffers. +3.3V.
17	SCKO3	3841f_S Output. This output has been optimized for the lowest jitter and should be connected to the audio DAC(s).
18	RST	Reset. When this pin is LOW, device is held in reset.(1)
19	MD/FS0	Serial Data Input for Software Mode/ Sampling Frequency Selection for Hardware Mode. When MODE pin is LOW. MD is selected.(1)
20	MC/FS1	Shift Clock Input for Software Mode/ Sampling Frequency Selection for Hardware Mode. When MODE pin is LOW. MC is selected.(1)

Note:(1) Schmitt-trigger input with internal pull-down resistors.

Table 3-5-4 TA1313F (1/2)

Pin No.	Name	Function
1	GNDP	GND terminal
2	LDO2	Drive output 2
3	MD2	Monitor input 2
4	NC	—
5	NC	—
6	VrA	Analog VREF
7	Vrfi	Filter capacity for the reference
8	VrD	Digital VREF
9	Vdd	Power supply terminal
10	DPAC	DPD interchange combination capacity 1
11	DPBD	DPD interchange combination capacity 2
12	DPD1	DPD integral capacity 1
13	DPD2	DPD integral capacity 2
14	SCB	Control line (bit clock)
15	SCL	Control line (latch signal)
16	SCD	Control line (serial data)
17	VRCK	Input of standard clock
18	NC	—
19	NC	—
20	VCKF	Capacity for the VRCK time constant adjustment
21	V_{CC}P	Power supply terminal
22	NC	—
23	NC	—
24	NC	—
25	DFIN	DPD filter capacity 1
26	DFHPF	DPD filter capacity 2
27	V_{CC}S	Power supply terminal (servo)
28	DFLPF	DPD filter capacity 2 (LPF)
29	NC	—
30	NC	—
31	LVL	Servo addition output
32	NC	—
33	TEO	TE ouptut
34	FEO	FE output
35	NC	—
36	NC	—
37	DFLVL	Defect detection threshold value
38	NC	—
39	NC	—
40	DFTN	DPD defect
41	RPZ	RF ripple ouptut 2
42	RPO	RF ripple output 1
43	RPB	The bottom of the RF ripple
44	RPP	The peak of the RF ripple
45	RFO	Equivalent RF ouptut
46	V_{CC}R	Power supply terminal
47	DPDB	Pit depth adjustment
48	TEB	TE balance
49	FEB	FE balance
50	TCC	Time constant adjustment

Table 3-5-4 TA1313F (2/2)

Pin No.	Name	Function
51	—	—
52	V_{CC}2	Power supply terminal
53	NC	—
54	NC	—
55	GND2	GND terminal
56	RFDC	DC feedback capacity
57	EQB	Boost adjustment
58	EQF	Frequency adjustment
59	MDI1	Input of monitor
60	LDO1	Drive output
61	P1TN	TE-Input (DVD)
62	P1TP	TE+Input (DVD)
63	P1FN	FE-Input (DVD)
64	P1FP	FE+Input (DVD)
65	LDP1	APC polarity 1
66	GNDR	GND terminal (RF)
67	P1DI	D input (DVD)
68	P1CI	C input (DVD)
69	P1BI	B input (DVD)
70	P1AI	A input (DVD)
71	LDP2	APC polarity 2
72	P2AI	A input (CD)
73	P2BI	B input (CD)
74	P2CI	C input (CD)
75	P2DI	D input (CD)
76	GNDS	GND terminal (Servo)
77	P2FP	FE+Input (CD)
78	P2FN	FE-Input (CD)
79	P2TP	TE+Input (CD)
80	P2TN	TE-Input (CD)

Table 3-5-5 TC9489F (1/4)

Pin No.	Name	Function
1	ASLCN	Data slice negative output
2	ASLCO	Analog data slice output
3	DVSS	DAC-only ground
4	RO	R-channel output signal
5	DVDD	DAC-only power supply
6	DVR	Amp reference signal output
7	LO	L-channel output signal
8	DVSS	DAC-only power ground
9	XVSS	Oscillator-only ground
10	XI	Crystal oscillator input
11	XO	Crystal oscillator output
12	XVDD	Oscillator-only power supply
13	TESM0	Test pin
14	TESM1	Test pin
15	TESM2	Test pin
16	VDD3	3.3V digital power supply
17	VSS3	3.3V digital ground
18	VPFC	Clock PLL block phase/frequency comparator output
19	TEST0	Test mode pin
20	VLPFI	VCO filter input for the clock PLL
21	VLPFO	VCO filter output for the clock PLL
22	VSS3	3.3V digital ground
23	MON0	Test monitor
24	MON1	Test monitor
25	MON2	Test monitor
26	MON3	Test monitor
27	MON4	Test monitor
28	MON5	Test monitor
29	MON6	Test monitor
30	MON7	Test monitor
31	MON8	Test monitor
32	MON9	Test monitor
33	VDD3	3.3V digital power supply
34	NC	—
35	NC	—
36	TEST1	Test mode pin
37	FLGA	General-purpose I/O or flag monitor
38	FLGB	General-purpose I/O or flag monitor
39	VSS3	3.3V digital ground
40	/RST	Reset pin
41	/MA	Microcomputer address enable signal
42	/MRD	Microcomputer data read signal
43	/MWR	Microcomputer data write signal
44	/MCE	Microcomputer chip enable signal
45	/MINT	Microcomputer interrupt signal
46	MD0	Microcomputer data bus
47	MD1	Microcomputer data bus
48	MD2	Microcomputer data bus
49	MD3	Microcomputer data bus
50	MD4	Microcomputer data bus

Table 3-5-5 TC9489F (2/4)

Pin No.	Name	Function
51	MD5	Microcomputer data bus
52	MD6	Microcomputer data bus
53	MD7	Microcomputer data bus
54	VDD5	5V power supply
55	NC	—
56	NC	—
57	SMCK	22M block clock output
58	VMCK	Data output block (signal processing block) clock output
59	VDD3	3.3V digital power supply
60	PD0	DVD/CD data output
61	VSS5	5V ground
62	PD1	DVD/CD data ground
63	PD2	DVD/CD data ground
64	PD3	DVD/CD data ground
65	PD4	DVD/CD data ground
66	VSS3	3.3V digital ground
67	PD5	DVD/CD data output
68	PD6	DVD/CD data output
69	PD7	DVD/CD data output
70	PD8	DVD/CD data output
71	/PSYC	DVD data selector sync signal
72	/PDRQ	DVD data transfer block
73	PDCK	DAD data transfer clock
74	VDD5	5V power supply
75	TESM3	Test pin
76	DIGI	1-bit DAC Digital In Input
77	TESM4	Test pin
78	VDD3	3.3V digital power supply
79	BA0	External RAM address output
80	BA1	External RAM address output
81	BA2	External RAM address output
82	BA3	External RAM address output
83	VSS5	5V ground
84	BA4	External RAM address output
85	BA5	External RAM address output
86	BA6	External RAM address output
87	BA7	External RAM address output
88	BA8	External RAM address output
89	VDD3	3.3V digital power supply
90	/BOE	External RAM/OE signal
91	/BRAS	External RAM/RAS signal
92	/BCAS	External RAM/CAS signal
93	/BWL	External RAM Lower/WE signal
94	/BWU	External RAM Upper/WE signal
95	VDD5	5V power supply
96	BD0	External RAM data input/output
97	BD1	External RAM data input/output
98	BD2	External RAM data input/output
99	BD3	External RAM data input/output
100	BD4	External RAM data input/output

Table 3-5-5 TC9489F (3/4)

Pin No.	Name	Function
101	BD5	External RAM data input/output
102	BD6	External RAM data input/output
103	BD7	External RAM data input/output
104	BD8	External RAM data input/output
105	VSS3	3.3V digital ground
106	BD9	External RAM data input/output
107	BD10	External RAM data input/output
108	BD11	External RAM data input/output
109	BD12	External RAM data input/output
110	VSS5	5V ground
111	BD13	External RAM data input/output
112	BD14	External RAM data input/output
113	BD15	External RAM data input/output
114	NC	—
115	NC	—
116	VDD3	3.3V digital power supply
117	PLCK	PLL block clock input/output
118	TESM5	Test pin
119	TESM6	Test pin
120	TESM7	Test pin
121	TESM8	Test pin
122	VCC3	3.3V digital ground
123	CFC1	VCO frequency control signal
124	CFC2	VCO frequency control signal
125	PPW	Phase comparator offset adjusting voltage output
126	PESV	Phase comparator offset adjusting voltage input
127	PVSS	3.3V PLL block-only ground
128	PESP	Phase comparator offset adjusting signal output
129	PDOP1	DVD/CD phase control signal (positive)
130	PDON1	DVD/CD phase control signal (negative)
131	PDOP2	DVD/CD phase control signal (positive)
132	PDON2	DVD/CD phase control signal (negative)
133	LPFN	Data PLL low-pass filter inverted input
134	LPFO	Data PLL low-pass filter output
135	PVREF	Data PLL block-only reference power supply
136	VCOREF	VCO reference
137	VCOT	VCO automatic adjusting filter output
138	PVDO	3.3V PLL block-only power supply
139	SLCO1	Data slice 6-bit DAC output
140	TESM9	Test pin
141	TEST2	Test mode pin
142	RFCD	CD RF signal input
143	RFDVD	DVD RF signal input
144	AVDD	3.3V analog block-only power supply
145	RFCT	RFRP center voltage input (latched at zero-cross)
146	RFZI	RFRP signal input (latched at zero-cross)
147	TEZI	Tracking error signal input (latched at zero-cross)

Table 3-5-5 TC9489F (4/4)

Pin No.	Name	Function
148	AWIN	Active-wide PLL control signal input
149	AVSS	3.3V analog block-only ground
150	FEI	Focus error signal input
151	TEI	Tracking error signal input
152	RFSB	RF level or subbeam signal summing input
153	RFRP	RFRP signal input
154	AVSS	3.3V analog block-only ground
155	TESM10	Test pin
156	EXTAD	General-purpose external ADC input
157	VREF	Analog block-only reference power supply: 1.65V
158	FOO	Focus EQ output
159	TRO	Tracking EQ output
160	AVDD	3.3V analog block-only power supply
161	AWCTL	Active-wide PLL control output
162	FMO	Feed EQ ouptut
163	DMO	Disc EQ ouptut
164	TEBC	Tracking balance control signal
165	FEBC	Focus balance control signal
166	DPDC	DPD error signal's pit depth adjusting signal
167	EQBC	RF wideband boost adjusting signal
168	ANMON	General-purpose PWM output
169	/DFCT	Black dot detection signal
170	VRCK	RF EQ response control clock
171	VSS3	3.3V digital ground
172	SCD	Head amp serial data
173	SCL	Head amp serial data latch pulse
174	SCB	Head amp serial data clock
175	FGIN	Disc FG signal input (with self-biasing circuit)
176	ASLCP	Data slice positive output

The pin names prefixed by a slash "/" are active-low pins.

5-3-2. Main Circuit Diagram

Part No.	Location
C201	B4
C202	A4
C203	B4
C204	A5
C205	B5
C206	C5
C207	C5
C301	B6
C302	B7
C303	B6
C304	C6
C305	B6
C306	C6
C307	E7
C308	B7
C309	E7
C310	B7
C311	C7
C312	E7
C313	C6
C314	B6
C315	E7
C316	E7
C317	E7
C318	E7
C319	C7
C320	E7
C321	E7
C322	E7
C323	E7
C324	E7
C325	E7
C326	E8
C401	B2
C402	B2
C404	C2
C405	C3
C406	B3
C407	B3
C408	C3
C409	B3
C410	B3
C411	B3
C412	C3
C413	B3
C414	B3
C415	C3
C416	B3
C417	B3
C418	B3
C419	B3
C420	B3
C421	C3
C422	B3
C423	B3
C424	B3
C425	B3
C426	B3
C427	B3
C428	B3
C429	B3
C430	B3
C431	B3
C432	B3
C433	A3
C434	A3
C435	A3
C436	C3
C437	C3
C438	C3
C439	A3
C440	A4
C441	C4
C442	B4
C443	B4
C444	B4
C445	C4
C446	B4
C447	A4
C448	B4
C449	B4
C450	B4
C451	C4
C452	C3
C453	C3
C454	B3
C501	B1
C502	B1
C503	B1
C504	C1
C505	B1
C506	B1
C507	C1
C508	A1
C509	C1
C510	A2
C511	C1
C512	B2
C513	A2
C514	B2
C515	B2
C516	B2
C517	A2
C518	B2
C519	A2
C520	B2
C522	B2
C523	B2
C524	B2
C525	B2
C526	A2
C527	B2
C528	A2
C529	B2
C530	A2
C531	B2
C532	B2
C533	B2
C534	B2
C535	B2
C536	B2
C538	B2
C601	F1
C602	F1
C603	F1
C604	E1
C605	D1
C606	E1
C607	E1
C608	E2
C609	D2
C610	D2
C611	F2
C612	E2
C613	E3
C614	D3
C615	F3
C702	E8
C703	F8
C704	F8
C705	E8
C706	E8
C707	E8
C708	F8
C709	F8
C710	F8
C711	F8
C901	A7
C903	A7
C904	A7
C905	A7
C906	A7
C907	A7
C908	A7
C909	A8
C910	A8
C911	A8
C912	A8
C913	A8
C914	A8
C915	C8
C916	A8
C917	A8
CN301	E8
CN501	B1
CN502	B1
CN503	C1
CN601	D1
CN602	D1
CN603	E1
CN701	E8
CN901	B8
D501	B1
D901	B8
D902	C8
E201	A2
E202	B5
E203	B5
E204	B5
E205	B5
E206	B5
E207	B5
E208	B5
E209	B5
E302	C6
E303	C6
E304	B7
E305	B7
E306	E6
E307	E6
E308	E6
E309	E6
E310	E6
E311	E6
E312	E6
E313	E6
E314	C7
E315	E7
E316	C7
E317	E7
E318	B7
E319	C7
E320	C7
E321	C7
E322	C6
E326	E7
E327	E8
E328	E8
E329	E8
E330	E8
E331	E8
E332	E8
E333	E8
E334	E8
E335	E8
E336	E8
E337	E8
E338	E8
E339	E8
E340	E8
E401	B3
E402	C2
E405	C3
E406	C3
E407	C3
E408	B3
E409	B3
E410	C3
E411	B3
E412	B3
E413	C3
E414	C3
E415	C3
E416	C3
E417	C4
E418	C4
E419	C4
E420	C4
E421	C4
E422	C4
E423	C4
E424	C4
E425	B4
E426	B4
E427	B4
E428	B4
E429	B4
E501	B2
E502	A1
E503	B2
E504	C1
E505	B1
E506	B1
E507	B1
E508	B1
E509	B1
E510	B1
E511	B1
E512	B1
E513	B1
E514	B1
E515	B1
E516	B1
E517	C1
E518	C1
E519	B1
E520	B1
E521	B1
E522	B1
E523	B1
E524	B1
E525	B1
E526	B1
E527	B1
E528	C1
E529	C1
E530	C1
E531	C1
E532	C1
E533	B1
E534	A1
E535	A1
E536	A1
E537	B1
E538	C1
E539	C1
E540	C1
E541	C1
E542	C1
E543	B1
E544	C2
E545	C2
E546	C2
E547	C2
E548	A2
E550	B2
E551	B2
E552	B2
E553	B2
E601	E1
E602	E1
E603	E1
E604	E1
E605	E1
E606	E1
E607	E1
E608	E1
E609	E1
E610	E1
E611	D1
E612	D1
E613	D1
E614	D1
E615	D1
E616	D1
E617	D1
E618	D1
E619	D1
E620	D1
E621	D1
E622	D1
E623	E1
E624	D1
E625	E1
E626	D1
E627	E1
E628	E2
E629	D2
E630	E2
E631	D2
E632	E2
E633	E2
E634	D2
E635	E2
E636	D2
E637	E2
E638	E2
E639	E2
E640	E2
E641	E2
E642	E2
E643	E2
E644	D3
E645	E2
E646	E2
E647	D3
E648	D3
E650	D2
E651	D2
E654	D3
E701	E7
E702	F8
E703	E8
E704	F8
E706	E8
E710	E8
E713	E8
E714	F8
E715	F8
E716	F8
E724	E8
E725	E8
E726	E8
E727	E8
E728	E8
E729	F8
E730	E8
E901	A8
E902	B8
E903	B8
E904	B8
E905	B8
E906	B8
E907	B8
E908	B8
E909	B8
E910	B8
E911	B8
E912	B8
E913	B8
E914	B8
E915	B8
E916	C8
E917	C8
E918	C8
E919	C8
E920	C8
E921	C8
E922	C8
E923	C8
E924	C8
E925	C8
E926	C8
E927	A8
E928	A8
E929	A7
E930	C8
FL301	C7
FL306	E7
FL401	C2
FL701	E8
FL702	F8
FL703	E8
FL704	E8
FL705	E8
FL901	A7
IC201	A4
IC202	B5
IC301	B6
IC302	C7
IC303	E7
IC304	C6
IC401	B2
IC402	A4
IC501	B1
IC502	B2
IC503	C1
IC504	B2
IC601	D1
IC602	E1
IC603	E2
IC604	D2
IC605	F2
IC606	F3
IC607	D3
IC608	F4
IC609	E3
IC610	D3
IC901	A6
IC902	A7
IC903	A7
IC904	A7
IC905	A7
IC906	A8
JP601	D3
L901	A7
Q301	E8
Q302	E8
Q401	C3
Q501	A1
Q601	E3
Q602	E3
R205	C5
R301	B6
R302	E7
R303	E7
R304	E7
R305	C7
R306	B7
R307	E8
R308	B6
R309	E7
R310	E8
R311	E7
R312	E8
R313	B6
R314	E8
R319	E6
R320	E7
R322	E7
R323	E7
R325	E7
R326	E8
R401	B3
R402	C2
R403	B2
R404	C3
R405	C3
R406	B3
R407	B3
R408	C3
R409	B3
R410	C3
R411	B3
R412	B3
R413	B3
R414	B3
R416	B3
R417	C3
R418	B3
R419	B3
R420	B3
R421	C3
R422	C3
R423	C3
R424	B3
R425	C3
R426	A3
R427	B3
R428	A3
R429	B3
R430	A3
R431	B2
R432	A3
R433	B3
R434	B3
R435	B3
R436	A3
R437	B3
R438	A3
R439	B3
R440	C3
R441	C3
R442	B3
R443	B3
R444	C3
R445	C3
R446	C3
R447	C3
R448	C4
R449	B4
R450	B4
R451	C4
R452	B4
R453	C3
R454	B3
R456	A3
R457	B3
R458	B3
R459	A3
R460	A3
R461	C4
R501	B1
R502	B2
R503	B2
R504	B2
R505	A1
R506	B1
R507	A1
R508	A2
R509	C1
R510	A1
R512	A1
R513	C2
R514	B1
R515	B2
R516	B2
R517	B2
R518	C2
R519	A2
R520	C2
R521	C2
R522	C2
R523	C2
R524	C2
R525	A2
R526	C2
R527	C2
R528	C2
R529	C2
R530	C2
R532	C2
R533	C2
R535	A2
R536	A2
R538	B2
R539	A1
R542	B2
R545	A2
R546	B2
R601	E1
R602	E1
R603	E1
R604	E1
R605	E1
R606	D1
R607	D1
R608	E1
R609	D1
R610	E1
R611	E1
R612	D1
R613	E1
R614	D1
R615	D1
R616	D1
R617	D1
R618	D3
R619	D1
R620	D1
R621	E1
RM504	C2
RM601	E2
RM602	E2
RM603	E2
RM605	D2
RM606	D2
RM607	D3
RM608	D3
RM609	D3
RM610	E3
RM611	E3
RM612	E3
RM613	D1
RM901	B8
RM902	C8
RM903	C8
S602	E2
TP201	B5
TP202	B5
TP203	B5
TP204	B5
TP205	B5
TP301	B7
TP303	B6
TP304	B6
TP305	B6
TP306	B7
TP401	B3
TP402	B3
TP403	B3
TP404	B3
TP405	B3
TP409	B3
TP410	C4
TP411	C4
TP412	B4
TP413	B4
TP414	C3
TP501	B1
TP502	A2
TP503	B2
TP504	A2
X401	C3
X601	E1
X901	A7

LASER DRIVE SIGNAL
PICKUP ERROR SIGNAL
TRACKING SERVO SIGNAL
TRAY CONTROL SIGNAL
FOCUS SERVO SIGNAL
FOCUS ERROR
TRACKING ERROR
FEED MOTOR SERVO SIGNAL
DISC MOTOR SERVO SIGNAL
ADDRESS BUS
DATA BUS
SERIAL DATA
AUDIO SIGNAL R
AUDIO SIGNAL L
IEC 958 DATA for DVD, VCD
DIGITAL VIDEO DATA CITU R656

TA1313F IC502 RF AMP
TC9489F IC401 SERVO DATA PROCESSOR
IC202 203G08F0103 TRACK BUFFER
IC201 4M DRAM
2M DRAM
IC301 MD36710X AV-MAIN-PROCESSOR
IC303 ADV7170 VIDEO-ENCODER
IC304 HY57V16160ALTC-10 16M-S-DRAM
IC302 HY57V16160ALTC-10 16-S-DRAM
KA3030 IC503 PUH DRIVER MOTOR DRIVER
IC604 TMP94CS40AF MAIN CPU
IC605 HY5118256AJC-60 2M DRAM
TC9268 MIRACLE BOOT-ROM 8M FROM
TC9268
EE-PROM IC601 S24C04BFJ-TB
IC610 TC7W241FU
IC901 TC7K241FU
IC902 NJM2370
IC903 PLL1700
TC7304F
TC7504F IC501
IC603 PST59-16D
IC701 AIP-PW-SM3-TB
AUDIO-DAC
POWER-SUPPLY

CN501 PU-HEAD-1/F 04P232-01B
CN502 5207-2906
CN503 52808-1310
CN504 5268-32-008
CN601 DISC-MOTOR-1/F
CN602 5308-16LD
CN603 FRONT-MPU-1/F 52808-1310
CN604 5308-16LD
CN605 RS232C-1/F TOP
CN606 5308-16LD
CN901 SD-1200 : 7P (Pin7-Pin1)
CN902 5268-16LD
CN903 5268-14LD
CN904 5268-14LD
CN905 5268-14LD
CN906 5268-14LD
CN907 5268-14LD
CN908 5268-14LD
CN909 5268-14LD
CN910 5268-14LD
CN911 5268-14LD
CN912 5268-14LD
CN913 5268-14LD
CN914 5268-14LD
CN915 5268-14LD
CN916 5268-14LD
CN917 5268-14LD
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CN934 5268-14LD
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CN939 5268-14LD
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CN942 5268-14LD
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CN946 5268-14LD
CN947 5268-14LD
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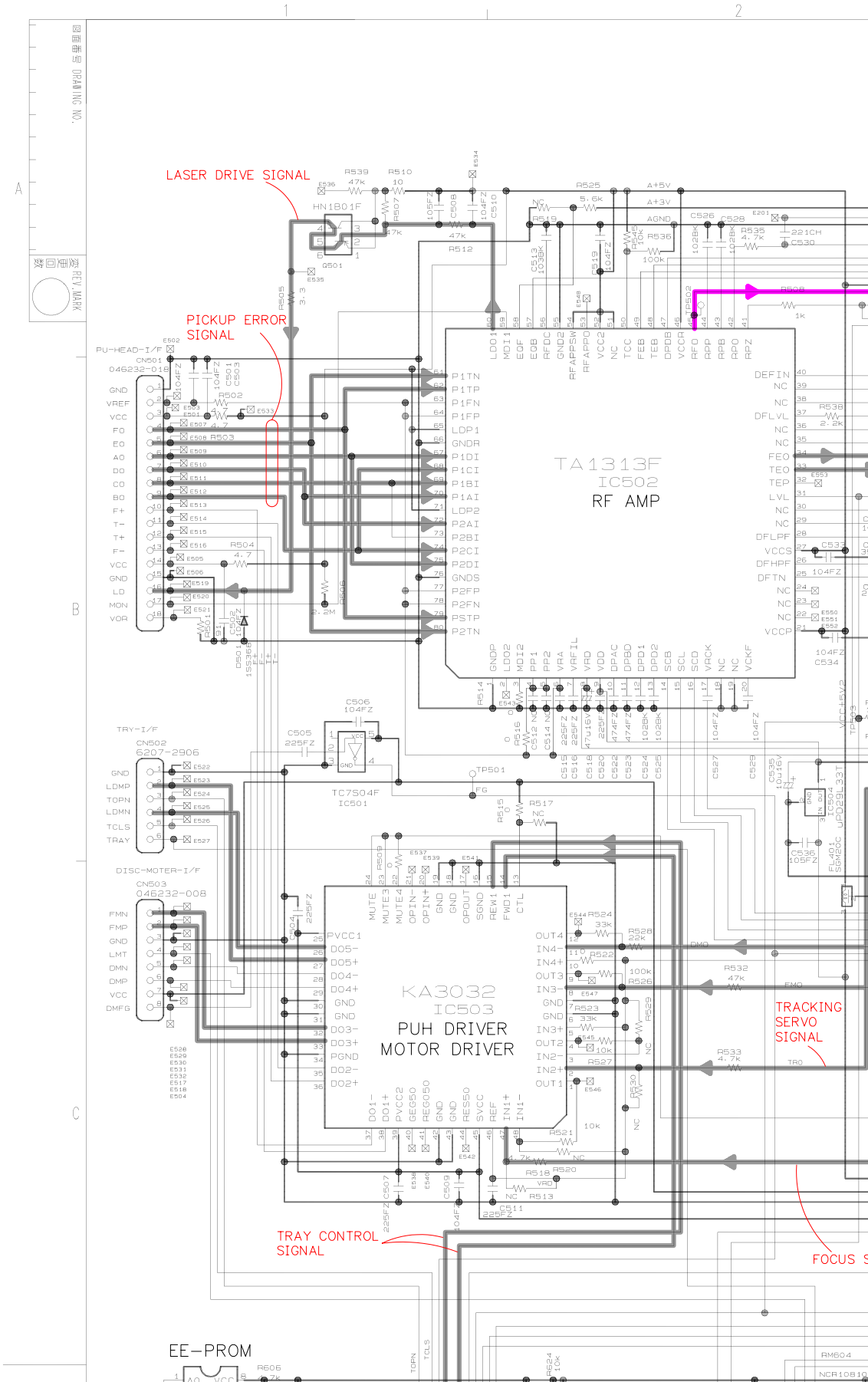
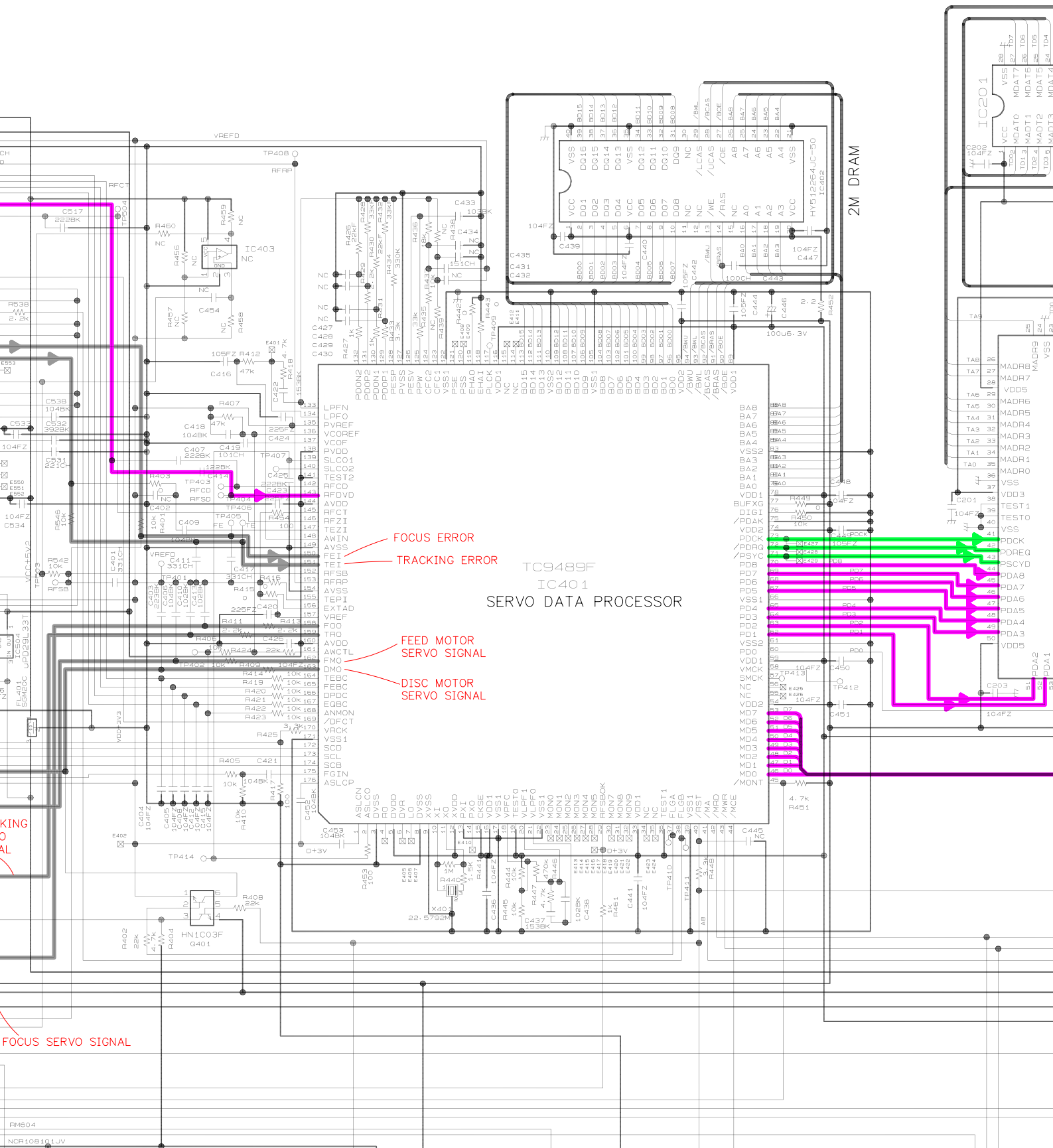
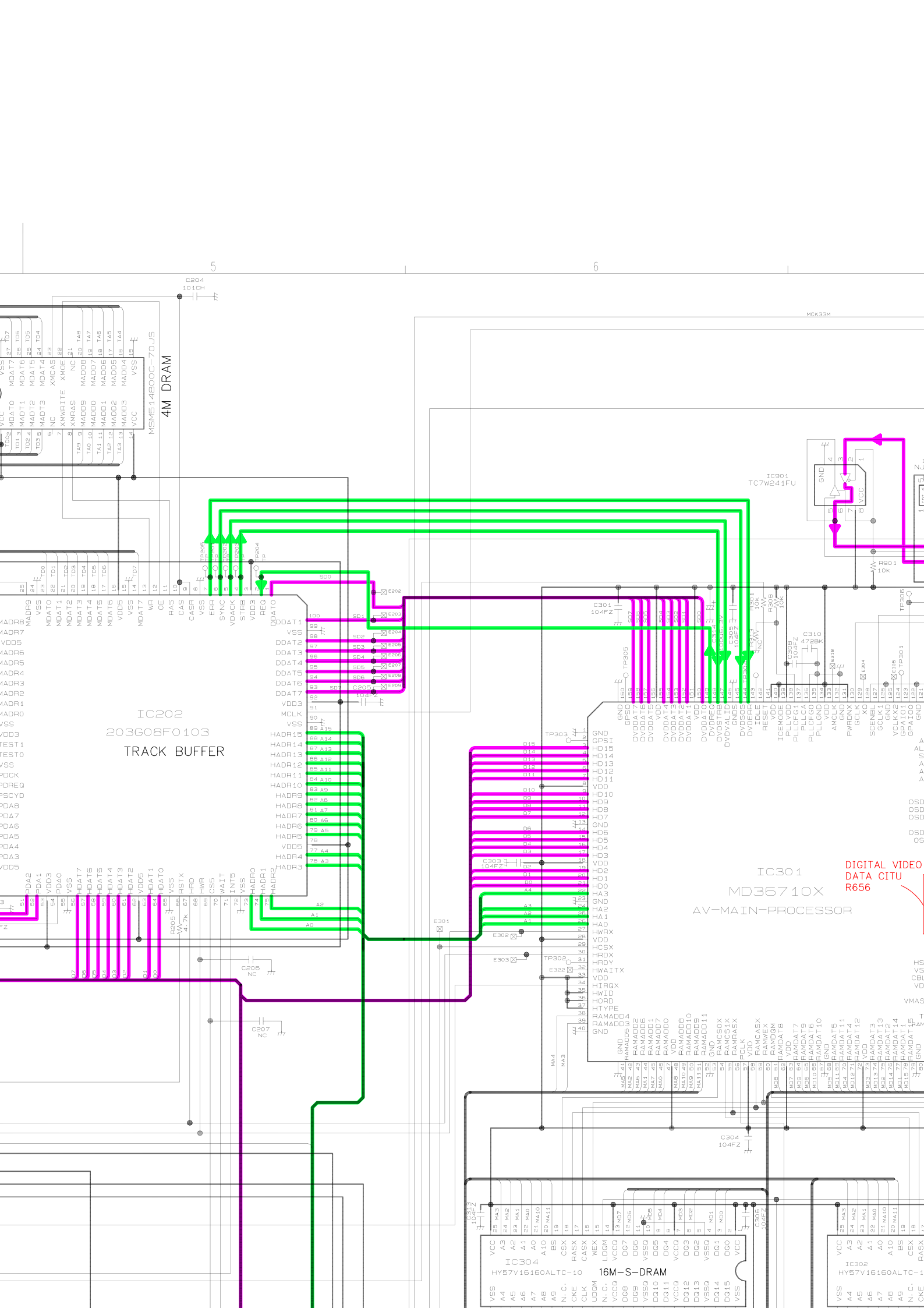
CN977 5268-14LD
CN978 5268-14LD
CN979 5268-14LD
CN980 5268-14LD
CN981 5268-14LD
CN982 5268-14LD
CN983 5268-14LD
CN984 5268-14LD
CN985 5268-14LD
CN986 5268-14LD
CN987 5268-14LD
CN988 5268-14LD
CN989 5268-14LD
CN990 5268-14LD
CN991 5268-14LD
CN992 5268-14LD
CN993 5268-14LD
CN994 5268-14LD
CN995 5268-14LD
CN996 5268-14LD
CN997 5268-14LD
CN998 5268-14LD
CN999 5268-14LD
CN1000 5268-14LD

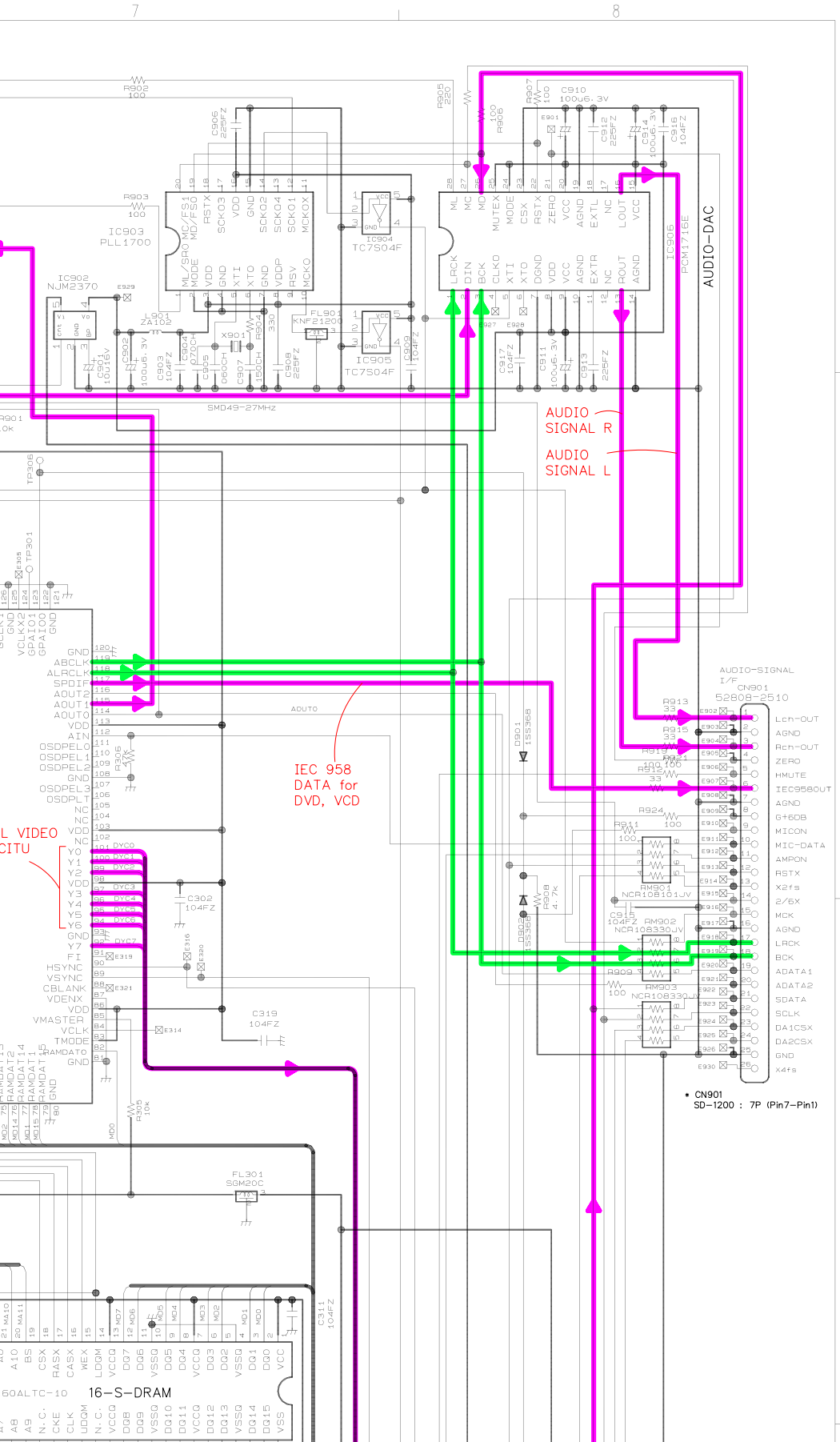
Fig. 3-5-5

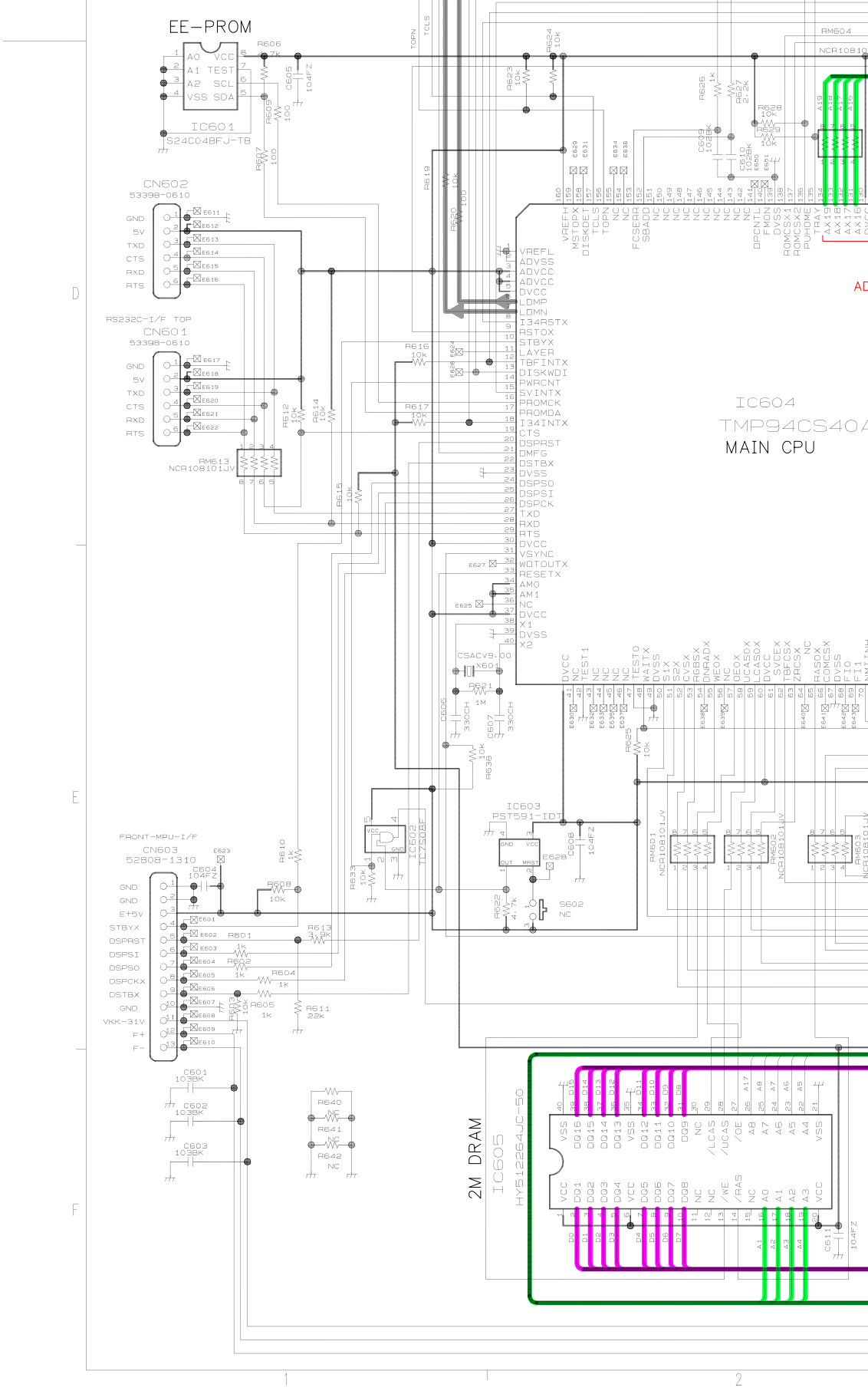
NC : NOT USED

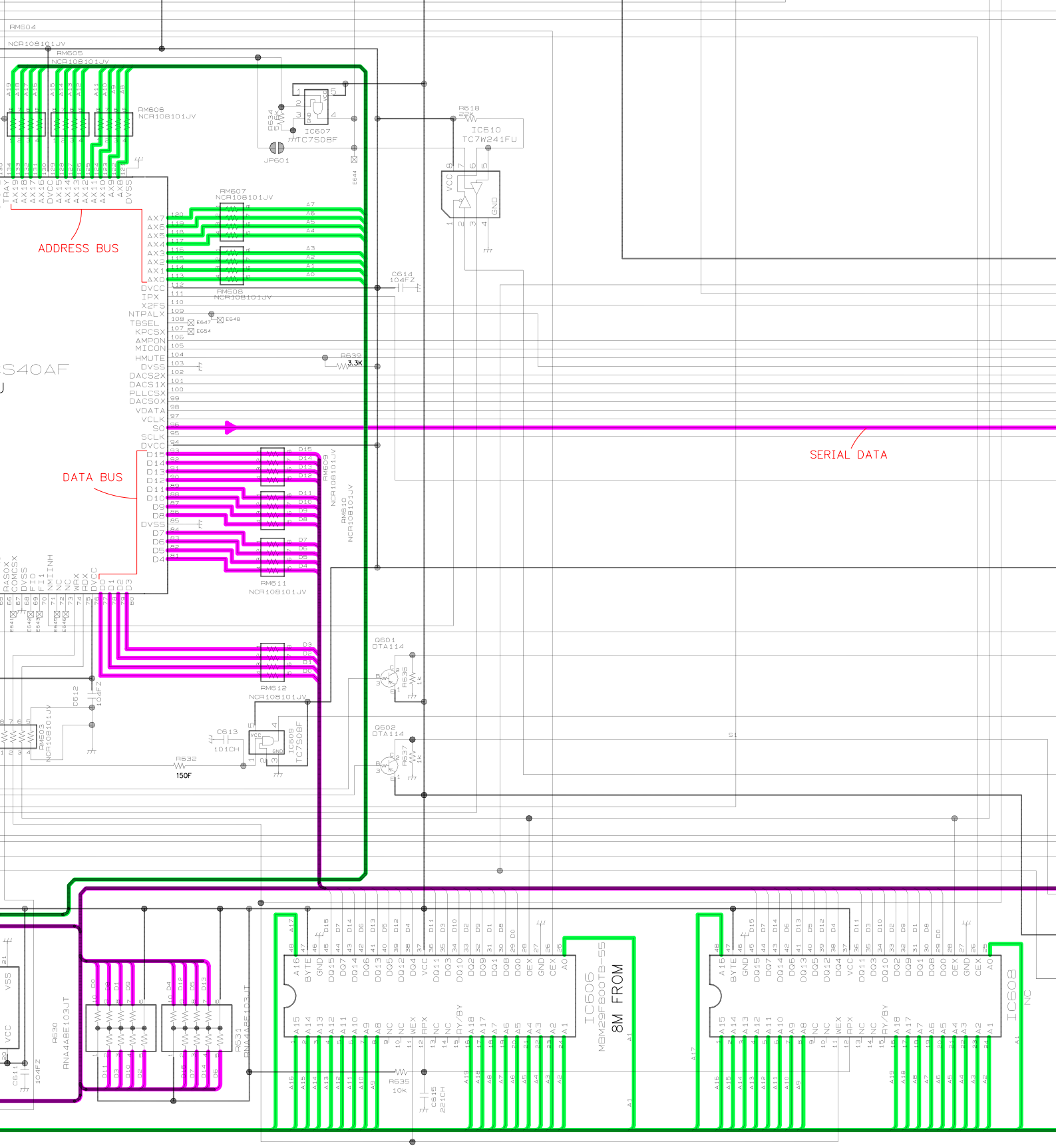

LASER DRIVE SIGNAL
PICKUP ERROR SIGNAL
TA1313F
IC502
RF AMP
KA3032
IC503
PUH DRIVER
MOTOR DRIVER
TC7S04F
IC501
TRACKING SERVO SIGNAL
TRAY CONTROL SIGNAL
FOCUS S
EE-PROM
PU-HEAD-I/F
CN501
046232-018
TRY-I/F
CN502
6207-2906
DISC-MOTER-I/F
CN503
046232-008

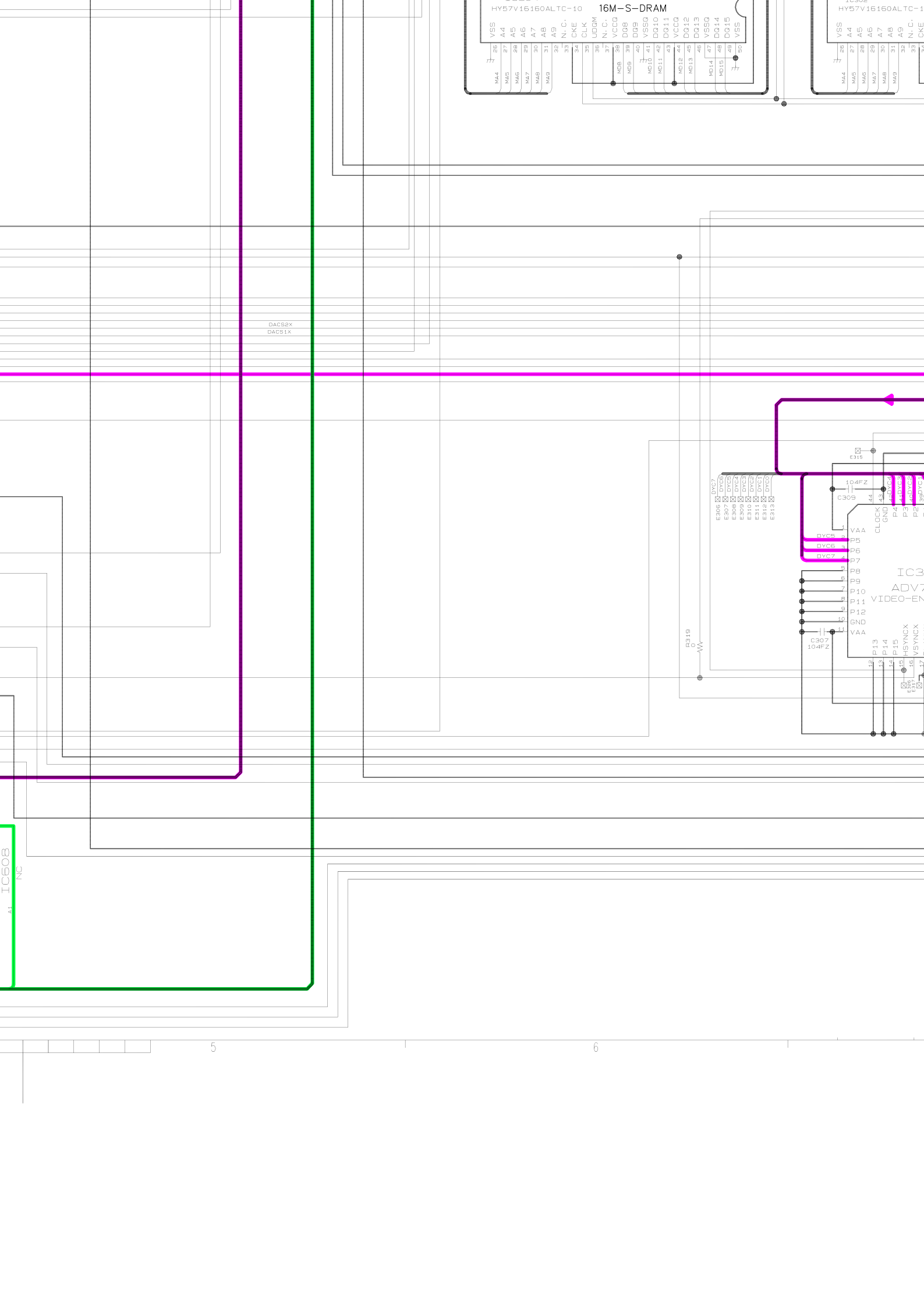

TC9489F
IC401
SERVO DATA PROCESSOR
FOCUS ERROR
TRACKING ERROR
FEED MOTOR SERVO SIGNAL
DISC MOTOR SERVO SIGNAL
FOCUS SERVO SIGNAL
2M DRAM
IC201
HY512264JC-50
IC402
IC403
HN1C03F
Q401
X401
22.5792M


4M DRAM
IC202
203G08F0103
TRACK BUFFER
IC301
MD36710X
AV-MAIN-PROCESSOR
DIGITAL VIDEO
DATA CITU
R656
IC304
HY57V16160ALTC-10
16M-S-DRAM
IC302
HY57V16160ALTC-10
IC901
TC7W241FU


AUDIO-DAC
IC906
PCM1716E
IC903
PLL1700
IC902
NJM2370
IC904
TC7S04F
IC905
TC7S04F
SMD49-27MHz
AUDIO
SIGNAL R
AUDIO
SIGNAL L
IEC 958
DATA for
DVD, VCD
AUDIO-SIGNAL
I/F
CN901
52808-2510
Lch-OUT
AGND
Rch-OUT
ZERO
HMUTE
IEC958OUT
AGND
G+6DB
MICON
MIC-DATA
AMPON
RSTX
X2fs
2/6X
MCK
AGND
LRCK
BCK
ADATA1
ADATA2
SDATA
SCLK
DA1CSX
DA2CSX
GND
X4fs
* CN901
SD-1200 : 7P (Pin7-Pin1)
16-S-DRAM


EE-PROM
IC601
S24C04BFJ-TB
CN602
53398-0610
RS232C-I/F TOP
CN601
53398-0610
RM613
NCR108101JV
IC604
TMP94CS40A
MAIN CPU
CSACV9.00
X601
IC603
PST591-IDT
FRONT-MPU-I/F
CN603
52808-1310
S602
NC
2M DRAM
IC605
HY51226400JC-50
RM601
RM602
RM603
RM604
NCR10810
1
2
D
E
F


ADDRESS BUS
DATA BUS
SERIAL DATA
IC606
MBM29F800TB-55
8M FROM
IC608
IC607
TC7S08F
IC609
TC7S08F
IC610
TC7W241FU
JP601
R639
3.3K
R632
150F
R635
10K
R618
22K
R634
47K
C614
104FZ
C612
104FZ
C613
101CH
C615
221CH
C611
104FZ
Q601
DTA114
Q602
DTA114
R636
1K
R637
1K
RM604
NCR108101JV
RM605
NCR108101JV
RM606
NCR108101JV
RM607
NCR108101JV
RM608
NCR108101JV
RM609
NCR108101JV
RM610
NCR108101JV
RM611
NCR108101JV
RM612
NCR108101JV
RM603
NCR108101JV
R630
RNA4A8E103JT
R631
RNA4A8E103JT


HY57V16160ALTC-10
16M-S-DRAM
DACS2X
DACS1X
IC3
ADV
VIDEO-EN
IC608
5
6

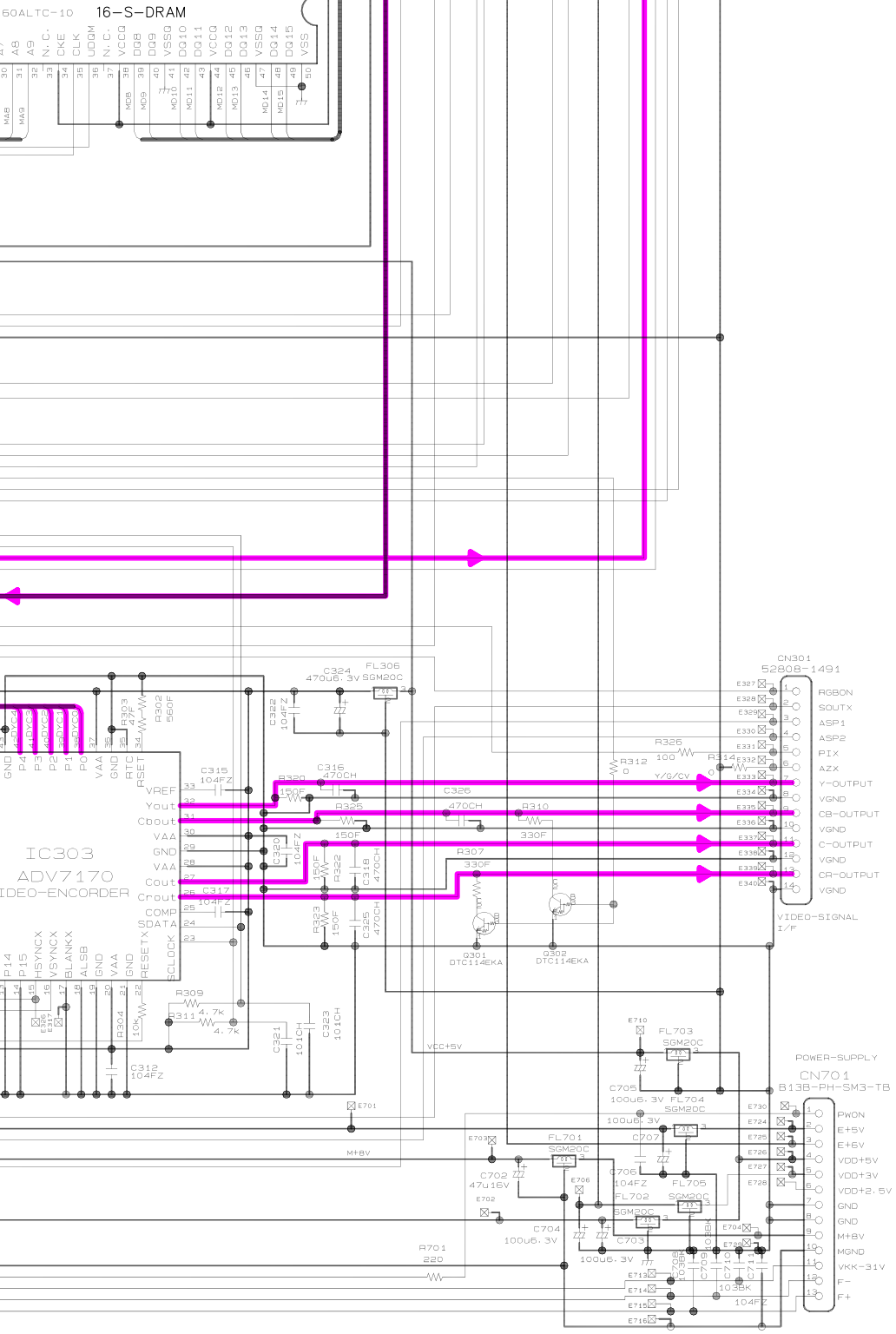
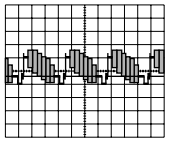

60ALTC-10
16-S-DRAM
IC303
ADV7170
IDEO-ENCORDER
CN301
52808-1491
RGBON
SOUTX
ASP1
ASP2
PIX
AZX
Y-OUTPUT
VGND
CB-OUTPUT
VGND
C-OUTPUT
VGND
CR-OUTPUT
VGND
VIDEO-SIGNAL
I/F
POWER-SUPPLY
CN701
B13B-PH-SM3-TB
PWON
E+5V
E+5V
VDD+5V
VDD+3V
VDD+2.5V
GND
GND
M+8V
MGND
VKK-31V
F-
F+
VCC+5V
M+8V
R701
220
NC : NOT USED

Fig. 3-5-5

5-4. Output Circuit Diagram

① JX01 Composite video output — B-8

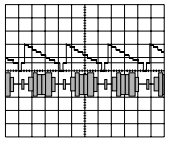


CVBS output
75Ω terminated
100% color bar

V: 500 mV/div
H: 20 µs/div

② JX01

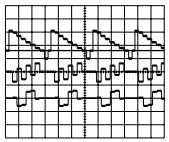
(a) S-video output Y — B-8
(b) S-video output C — B-8



S-Y/C
75Ω terminated
100% color bar
(a) Y
(b) C

V: 500 mV/div
H: 20 µs/div

③ JX01 Y/PB(CB)/PR(CR) output — C-8

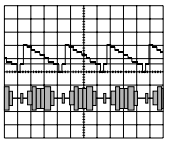


Component output
75Ω terminated
100% color bar
(Play)
Y
PB
PR

V: 500 mV/div
H: 20 µs/div

④ CNX01

(a) Pin ⑫ (Y) — B-5
(b) Pin ⑧ (C) — B-5

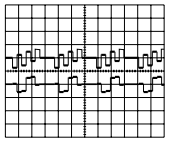


100% color bar
(Play)
(a)
(b)

V: 0.5 V/div
H: 20 µs/div

⑤ CNX01

(a) Pin ⑩ (CB) — B-5
(b) Pin ⑥ (CR) — B-5

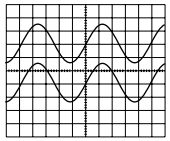


100% color bar (Play)
(a)
(b)

V: 0.5 V/div
H: 20 µs/div

⑥ JY01 L ch output / R ch output — D-4 / D-4

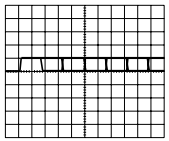
(1 kHz, FS)



L ch output
R ch output

V: 2 V/div
H: 200 µs/div

⑦ JY03 COAXIAL -DIGITAL OUTPUT — E-5

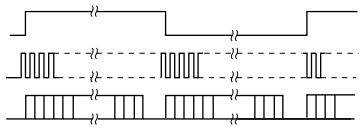


75Ω terminated

V: 500 mV/div
H: 0.1 µs/div

⑧ CNY01

(a) Pin ⑩ (LRCK) — C-1
(b) Pin ⑨ (BCK) — C-1
(c) Pin ⑦ (ADATA2) — C-1
⑧ (ADATA1) — C-1



(a)
(b)
(c)

Fig. 3-5-6

IC

ICY01 DA CONVERTER

1	0
2	2.5
3	4.9
4	3.2
5	3.5
6	0
7	0
8	0
9	0
10	0
11	0
12	2.3
13	2.4
14	2.4
15	0
16	2.4
17	2.3
18	4.9
19	3.3
20	0
21	0
22	0
23	0
24	4.9
25	2.4
26	2.4
27	1.3
28	4.9

ICY02 REGURATOR

1	5.0
2	5.8
3	0
4	5.6
5	5.0

ICY03 OP AMP

1	0
2	1.4
3	1.4
4	-9.0
5	1.4
6	1.4
7	0
8	9.7

ICY04 OP AMP

1	0
2	0
3	0
4	-9.0
5	0
6	0
7	0
8	9.7

ICY09 INVERTER

1	2.5
2	2.5
3	2.5
4	2.5
5	2.5
6	2.5
7	0
8	2.5
9	2.5
10	2.5
11	2.5
12	2.5
13	2.9
14	4.9

ICY08 DA CONVERTER

1	0
2	2.5
3	4.9
4	3.2
5	3.5
6	0
7	0
8	0
9	0
10	0
11	0
12	2.3
13	2.4
14	2.4
15	0
16	2.4
17	2.3
18	4.9
19	3.3
20	0
21	0
22	0
23	0
24	4.9
25	2.4
26	2.4
27	1.3
28	4.9

ICY11 OP AMP

1	0
2	0
3	0
4	-9.0
5	0
6	0
7	0
8	9.7

ICY12 OP AMP

1	0
2	1.4
3	1.4
4	-9.0
5	1.4
6	1.4
7	0
8	9.7

ICY13 REGURATOR

1	5.0
2	5.8
3	0
4	5.6
5	5.0

ICY16 SWITCH

1	0
2	0
3	-9.0
4	-9.0
5	5.0

ICY17 SWITCH

1	0
2	0
3	-9.0
4	-9.0
5	5.0

ICX03/04

1	4.7
2	4.7
3	9.5
4	4.7
5	4.7
6	0
7	4.7
8	4.7
9	0
10	9.5
11	4.7
12	0
13	4.7
14	0
15	4.7
16	9.5

Transistor

QY01 SWITCH

1	5.8
2	5.8
3	5.8
4	0
5	0
6	0

QY08 SWITCH

1	4.9
2	4.9
3	4.9
4	0
5	0
6	0

QY12 SWITCH

1	5.8
2	5.8
3	5.8
4	0
5	0
6	0

QY20 SWITCH

1	0
2	0
3	0
4	0
5	0
6	0

QY21 SWITCH

1	0
2	0
3	0
4	0
5	0
6	0

QY23 SWITCH

1	0
2	0
3	0
4	0
5	0
6	0

QY24 SWITCH

1	0
2	0
3	0
4	0
5	0
6	0

QY27 SWITCH

1	0
2	0
3	0
4	0
5	0
6	0

QY28 SWITCH

1	0
2	0
3	0
4	0
5	0
6	0

QY02 SWITCH

E	5.8
C	0
B	5.8

QY03 SWITCH

E	5.8
C	0
B	5.8

QY05 SWITCH

E	5.8
C	0
B	5.8

QY06 SWITCH

E	5.8
C	0
B	5.8

QY07 SWITCH

E	5.8
C	0
B	5.8

QY10 SWITCH

E	4.9
C	0
B	4.9

QY13 SWITCH

E	5.8
C	0
B	5.8

QY15 SWITCH

E	0
C	5.8
B	0

QY16 SWITCH

E	5.8
C	0
B	5.8

QY18 SWITCH

E	5.8
C	0
B	5.8

QY25 SWITCH

E	0
C	5.0
B	0

QY29 SWITCH

E	5.0
C	-9.0
B	5.0

Part No.	Location
CNX01	A5
CNX02	C5
CNX03	C8
CNY01	A1
CNY02	C5
CNY03	A5
CW01	D2
CW02	E3
CW03	A3
CW04	A3
CX01	B6
CX02	C6
CX03	D6
CX04	B6
CX05	B6
CX06	B6
CX07	C6
CX08	C6
CX09	C6
CX10	B7
CX11	B7
CX12	C7
CX13	B7

Part No.	Location
CX14	B7
CX15	B7
CX16	B7
CX17	C7
CX18	C7
CX19	A7
CX20	B7
CX21	C7
CX22	C7
CX23	A7
CX24	C7
CX25	C7
CX26	C7
CX27	E7
CX28	B8
CX29	B8
CX30	B8
CX31	C8
CX32	C8
CX33	D8
CX34	B8
CX35	D8
CX36	B8

Part No.	Location
CX37	C8
CX38	B6
CX39	B7
CX40	B6
CX41	D7
CX42	C5
CX43	C5
CX44	C5
CX45	C5
CX46	C5
CX47	A7
CX48	B7
CY01	F1
CY02	F1
CY03	F1
CY04	F1
CY05	F1
CY06	F1
CY07	A1
CY08	C2
CY09	E2
CY10	A2
CY11	D2

Part No.	Location
CY12	A2
CY13	C2
CY14	F2
CY15	A2
CY16	C2
CY17	E2
CY18	D2
CY19	C2
CY20	E2
CY21	C2
CY22	C2
CY23	E2
CY24	E2
CY25	A2
CY26	D2
CY27	A2
CY28	D2
CY29	A2
CY30	C2
CY31	D2
CY32	F2
CY33	B2
CY34	B2

Part No.	Location
CY35	D2
CY36	B2
CY37	C2
CY38	E2
CY39	C2
CY40	F2
CY41	D2
CY42	B2
CY43	E2
CY44	D2
CY45	C2
CY46	F2
CY47	B2
CY48	E2
CY49	C2
CY50	E2
CY51	D2
CY52	E2
CY53	C2
CY54	C2
CY55	E2
CY56	E3
CY57	B2

Part No.	Location
CY57	D3
CY58	C3
CY59	E3
CY60	E3
CY61	A3
CY62	B3
CY63	A3
CY64	D3
CY65	B3
CY66	A3
CY68	B3
CY69	A3
CY70	A3
CY71	A3
CY72	B3
CY73	A3
CY74	A3
CY75	E3
CY76	E4
CY77	E4
CY79	A4
CY80	B4
CY81	A4

Part No.	Location
CY82	A4
CY83	D4
CY84	D4
CY85	E4
CY86	E4
CY87	D4
CY88	D4
CY89	E4
CY90	B4
CY91	E4
CY92	A5
CY93	A5
CY94	A5
CY95	A3
CY95	B3
CY97	A3
CY98	A4
CY99	C3
DX01	B8
DX02	C8
DX03	C8
DX04	C8
DX05	C8

Part No.	Location
DX06	D8
DX07	D8
DX08	D7
DX09	B8
DY01	B1
DY02	B1
DY03	E2
DY04	F2
DY05	C2
DY06	B2
DY07	A2
DY08	F2
DY09	D2
DY10	B2
EX01	A5
EX02	A5
EX03	B5
EX04	B5
EX05	B5
EX06	B5
EX07	B5
EX08	B5
EX09	B5

Part No.	Location
EX10	B5
EX11	B5
EX12	B8
EX13	B8
EX14	B8
EX15	C8
EX16	C8
EX17	C8
EX18	C8
EX19	C8
EX20	C8
EX21	C8
EX22	C8
EX23	D8
EX24	D8
EX25	D8
EX26	D8
EX27	D8
EX28	D8
EX29	D8
EX30	D8
EX31	D8
EX32	D8

Part No.	Location
EX33	D8
EX34	D8
EX35	D8
EX36	D8
EX37	D8
EX38	C5
EX39	D5
EX40	D5
EX41	D5
EY01	A1
EY02	A1
EY03	A1
EY04	A1
EY05	A1
EY06	A1
EY07	A1
EY08	A1
EY09	A1
EY10	A1
EY11	B1
EY12	B1
EY13	B1
EY14	B1

Part No.	Location
EY15	B1
EY16	B1
EY17	B1
EY18	B1
EY19	B1
EY20	B1
EY21	B1
EY22	B1
EY23	B1
EY24	B1
EY25	B1
EY26	B1
EY27	B1
EY28	B1
EY29	B1
EY30	B1
EY31	E1
EY32	C2
EY33	B2
EY34	B2
EY35	B2
EY36	D2
EY37	D2

Part No.	Location
EY38	C2
EY39	F2
EY40	D2
EY41	C2
EY42	E2
EY43	B2
EY44	B2
EY45	D2
EY46	D2
EY47	C2
EY48	F2
EY49	B3
EY50	E3
EY51	B3
EY52	A3
EY53	A3
EY54	D4
EY55	D4
EY56	D4
EY57	E4
EY58	E4
EY59	D4
EY60	B4

Part No.	Location
EY61	E4
EY62	B4
EY63	B4
EY64	E4
EY65	E4
EY66	E4
EY67	E4
FLY01	E4
ICX01	C5
ICX02	D6
ICX03	B7
ICX04	C7
ICY01	A2
ICY02	A2
ICY03	A3
ICY04	A4
ICY05	F1
ICY06	C1
ICY07	D8
ICY09	E4
ICY10	C2
ICY11	D2
ICY12	E2

Part No.	Location
ICY13	A1
ICY14	A3
ICY15	B3
ICY16	A3
ICY17	A3
ICY31	E1
JX01	B8
JX02	C8
JX03	C8
JY01	D4
JY02	D4
JY03	D8
LX01	A7
LY01	E3
LY02	E4
LY03	B3
LY04	B4
LY05	C3
LY06	D3
LY07	E3
LY08	F1
QX01	D7
QX02	D7
QX03	D7

Part No.	Location
QX04	B7
QX05	B8
QX06	D8
QX78	D7
QY01	B2
QY02	D2
QY03	F2
QY04	C2
QY05	E2
QY06	F2
QY07	B2
QY08	D2
QY09	D2
QY10	D2
QY11	C2
QY12	F2
QY13	B2
QY14	D2
QY15	F2
QY16	B2
QY17	C2
QY18	F2
QY19	B3
QY20	E3

Part No.	Location
QY21	E3
QY22	B3
QY23	D3
QY24	D3
QY25	B3
QY26	C4
QY27	B4
QY28	A4
QY29	B3
RW01	A4
RW02	D4
RW03	E4
RW04	E4
RW05	B4
RW06	B4
RW07	A4
RW08	A4
RW09	C4
RW10	D4
RW11	D4
RW12	E4
RW13	C4
RW14	B4
RW15	B4

Part No.	Location
RW16	B4
RW17	A4
RW18	E4
RW19	E4
RW20	E4
RW21	E4
RW22	A5
RW23	A5
RW24	A3
RW25	A3
RW26	B3
RW27	B3
RW28	B3
RW29	A3
RW30	B4
RW31	B2
RW32	B2
RW33	A3
RW34	B4
RW35	C3
RW36	D3
RW37	E3
RW38	E3
RW39	F1

Part No.	Location
RW40	D2
RW41	D2
RX01	D6
RX02	D6
RX03	D6
RX04	B6
RX05	B6
RX06	B6
RX07	B6
RX08	B6
RX09	C6
RX10	C6
RX11	C6
RX12	C6
RX13	C6
RX14	C6
RX15	C6
RX16	B6
RX17	B6
RX18	B6
RX19	B6
RX20	B6
RX21	C6
RX22	C6

Part No.	Location
RX23	C6
RX24	C6
RX25	C6
RX26	C6
RX27	C6
RX28	B6
RX29	A7
RX30	B7
RX31	C7
RX32	B7
RX33	B7
RX34	B7
RX35	C7
RX36	C7
RX37	D7
RX38	D7
RX39	D7
RX40	B7
RX41	B7
RX42	D7
RX43	D7
RX44	D7
RX45	A7
RX46	D7

Part No.	Location
RX47	E7
RX48	A7
RX49	E7
RX50	C7
RX51	C7
RX52	D7
RX53	B7
RX54	D7
RX55	D7
RX56	C8
RX57	B8
RX58	C8
RX59	B8
RX59	C8
RX60	C8
RX61	C8
RX62	C8
RX63	D8
RX64	D8
RX65	D8
RX66	D8
RX67	B8
RX68	B8
RX70	B8

Part No.	Location
RX71	D7
RX72	B7
RX73	A5
RX74	B5
RX75	D6
RX76	C6
RX77	D6
RX78	D6
RX79	B6
RX80	C6
RX81	C6
RX82	B6
RX83	B8
RX84	B8
RX85	A7
RY01	A1
RY02	B1
RY03	B1
RY04	B1
RY05	B1
RY06	B1
RY07	B1
RY08	F1
RY09	F1

Part No.	Location
RY10	A1
RY11	F1
RY12	F1
RY13	F1
RY14	F1
RY15	F1
RY16	F1
RY17	A1
RY18	B1
RY19	D1
RY20	B1
RY21	F2
RY22	B1
RY23	C2
RY24	A2
RY25	B2
RY26	A2
RY27	A2
RY28	F2
RY29	D2
RY30	E2
RY31	C2
RY32	D2
RY33	D2

Part No.	Location
RY34	C2
RY35	F2
RY36	C2
RY37	E2
RY38	E2
RY39	C2
RY40	D2
RY41	C2
RY42	E2
RY43	E2
RY44	C2
RY45	E2
RY46	C2
RY47	A2
RY48	D2
RY49	D2
RY50	D2
RY51	C2
RY52	E2
RY53	E2
RY54	C2
RY54	E2
RY55	E2
RY56	C2

Part No.	Location
RY57	E2
RY58	A2
RY59	A2
RY60	B2
RY61	B2
RY62	B2
RY63	C2
RY65	B2
RY66	A2
RY67	B3
RY68	A3
RY69	E3
RY70	E3
RY71	E3
RY72	B3
RY73	D3
RY74	E3
RY75	D3
RY76	E3
RY77	E3
RY78	A3
RY79	B3
RY80	A3
RY81	E3

Part No.	Location
RY82	D3
RY83	B3
RY84	B3
RY85	D3
RY86	D3
RY87	B3
RY88	B3
RY89	A4
RY90	A4
RY91	D4
RY92	B3
RY93	B4
RY94	D4
RY95	E4
RY96	A4
RY97	A4
RY98	E4
RY99	B4

Pin NO	Wave Point
10	⑧(a)
9	⑧(b)
7,8	⑧(c)

FRONT OUT

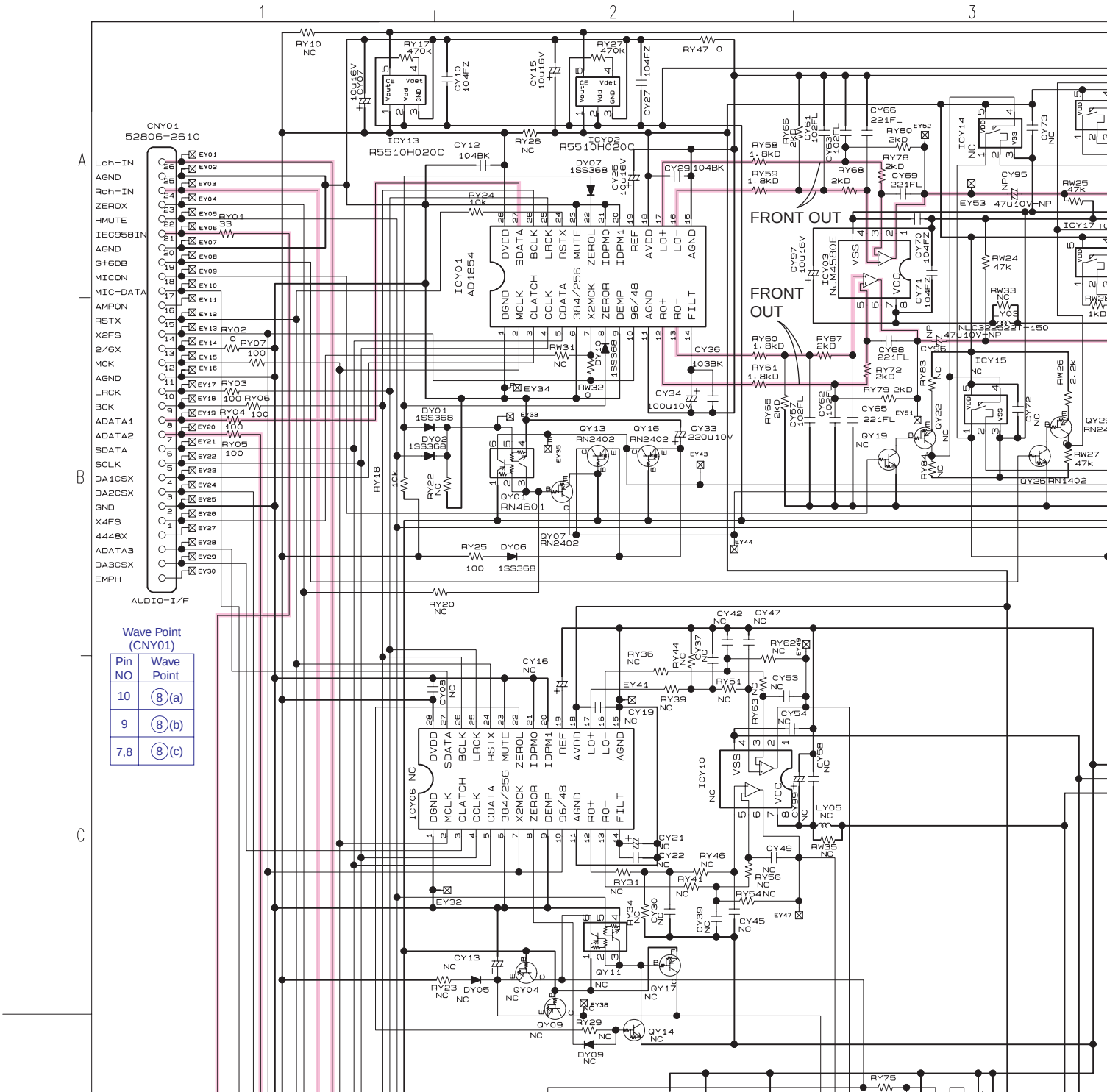
FRONT OUT

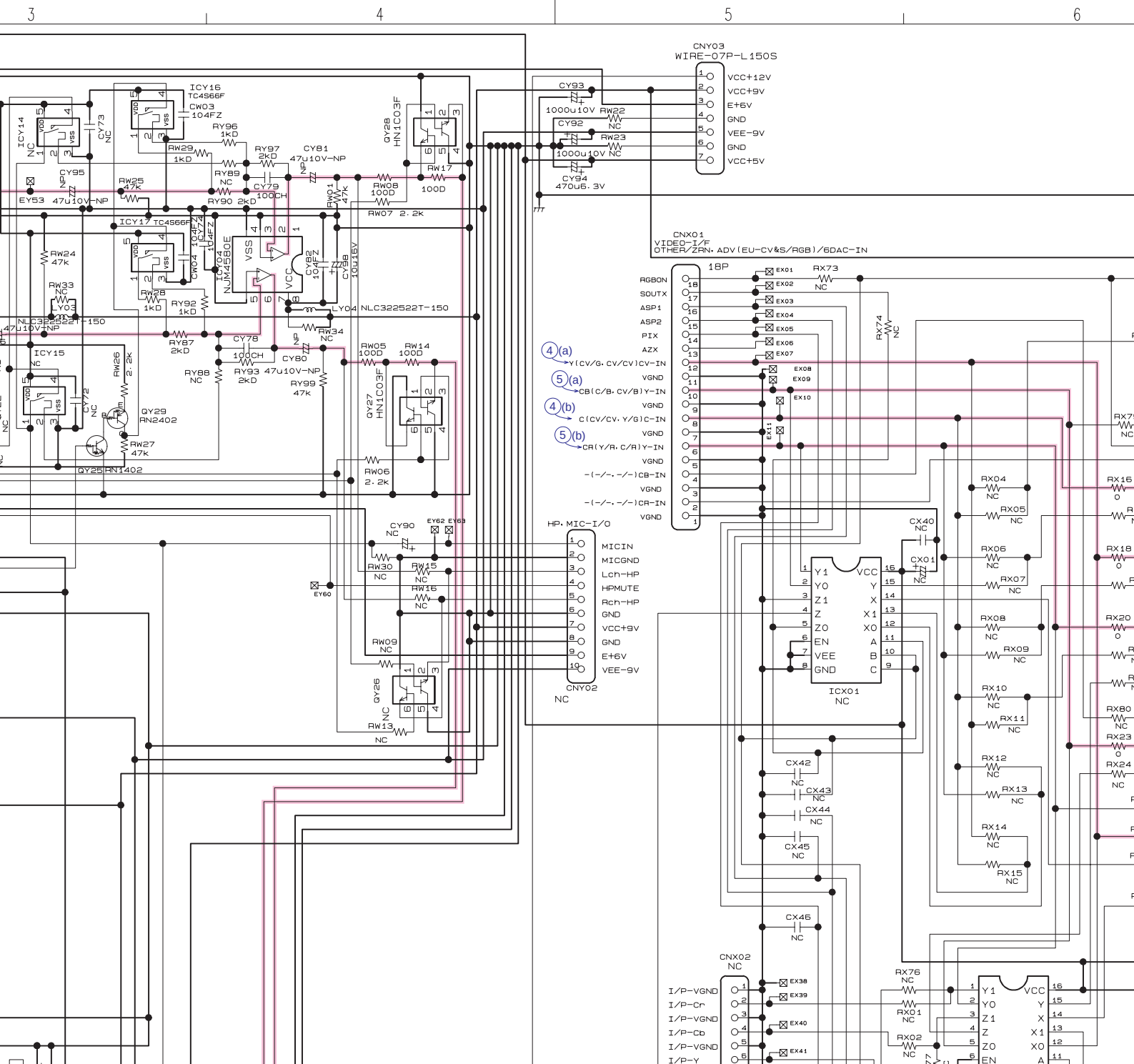
REAR OUT

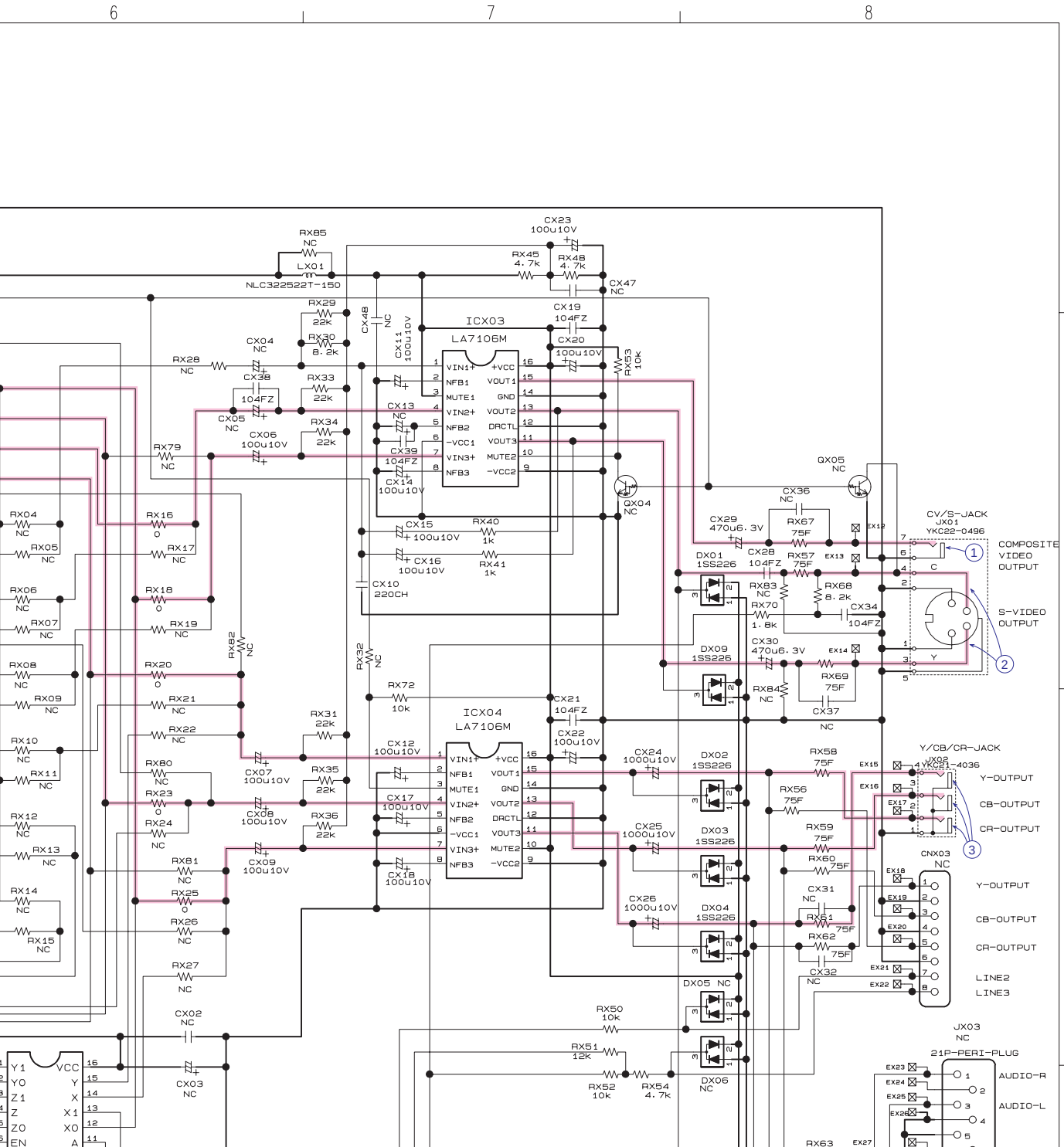
Center sub woofer OUT

DIGITAL AUDIO SIGNAL

Fig. 3-5-7


CNY01
52806-2610
AUDIO-I/F
Lch-IN
AGND
Rch-IN
ZEROX
HMUTE
IEC958IN
AGND
G+6DB
MICON
MIC-DATA
AMPON
RSTX
X2FS
2/6X
MCK
AGND
LRCK
BCK
ADATA1
ADATA2
SDATA
SCLK
DA1CSX
DA2CSX
GND
X4FS
4448X
ADATA3
DA3CSX
EMPH
ICY01
AD1854
ICY13
R5510H020C
ICY02
R5510H020C
ICY03
NJM4580E
FRONT OUT
FRONT OUT
ICY05
ICY06
ICY10
ICY14
ICY15
QY01
RN4601
QY13
RN2402
QY16
RN2402
QY07
RN2402
QY19
QY25
RN1402
Wave Point
(CNY01)
Pin NO
Wave Point
10
⑧(a)
9
⑧(b)
7,8
⑧(c)


3
4
5
6
CNY03
WIRE-07P-L150S
VCC+12V
VCC+9V
E+6V
GND
VEE-9V
GND
VCC+5V
CNX01
VIDEO-I/F
OTHER/ZRN. ADV(EU-CV&S/RGB)/6DAC-IN
18P
RGBON
SOUTX
ASP1
ASP2
PIX
AZX
Y(CV/G.CV/CV)CV-IN
VGND
CB(C/B.CV/B)Y-IN
VGND
C(CV/CV.Y/G)C-IN
VGND
CR(Y/R.C/R)Y-IN
VGND
-(-/-.-/-)CB-IN
VGND
-(-/-.-/-)CR-IN
VGND
HP.MIC-I/O
MICIN
MICGND
Lch-HP
HPMUTE
Rch-HP
GND
VCC+9V
GND
E+6V
VEE-9V
CNY02
NC
ICX01
NC
CNX02
NC
I/P-VGND
I/P-Cr
I/P-VGND
I/P-Cb
I/P-VGND
I/P-Y
ICY16
TC4S66F
ICY14
ICY15
ICY17
TC4S66F
IC04
NJM4580E
QY29
RN2402
QY25
RN1402
QY28
HN1C03F
QY27
HN1C03F
QY26
NC
LY04 NLC322522T-150
4(a)
5(a)
4(b)
5(b)


6
7
8
A
B
C
ICX03
LA7106M
ICX04
LA7106M
VIN1+
NFB1
MUTE1
VIN2+
NFB2
-VCC1
VIN3+
NFB3
+VCC
VOUT1
GND
VOUT2
DRCTL
VOUT3
MUTE2
-VCC2
LX01
NLC322522T-150
QX04
QX05
DX01 1SS226
DX02 1SS226
DX03 1SS226
DX04 1SS226
DX05 NC
DX06 NC
DX09 1SS226
CV/S-JACK
JX01
YKC22-0496
COMPOSITE VIDEO OUTPUT
S-VIDEO OUTPUT
Y/CB/CR-JACK
JX02
YKC21-4036
Y-OUTPUT
CB-OUTPUT
CR-OUTPUT
CNX03
NC
LINE2
LINE3
JX03
NC
21P-PERI-PLUG
AUDIO-R
AUDIO-L
Y1
YO
Z1
Z
ZO
EN
VCC
Y
X
X1
XO
A
CX02
CX03
CX04
CX05
CX06
CX07
CX08
CX09
CX10
CX11
CX12
CX13
CX14
CX15
CX16
CX17
CX18
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CX23
CX24
CX25
CX26
CX28
CX29
CX30
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CX34
CX36
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CX38
CX39
CX47
CX48
RX04
RX05
RX06
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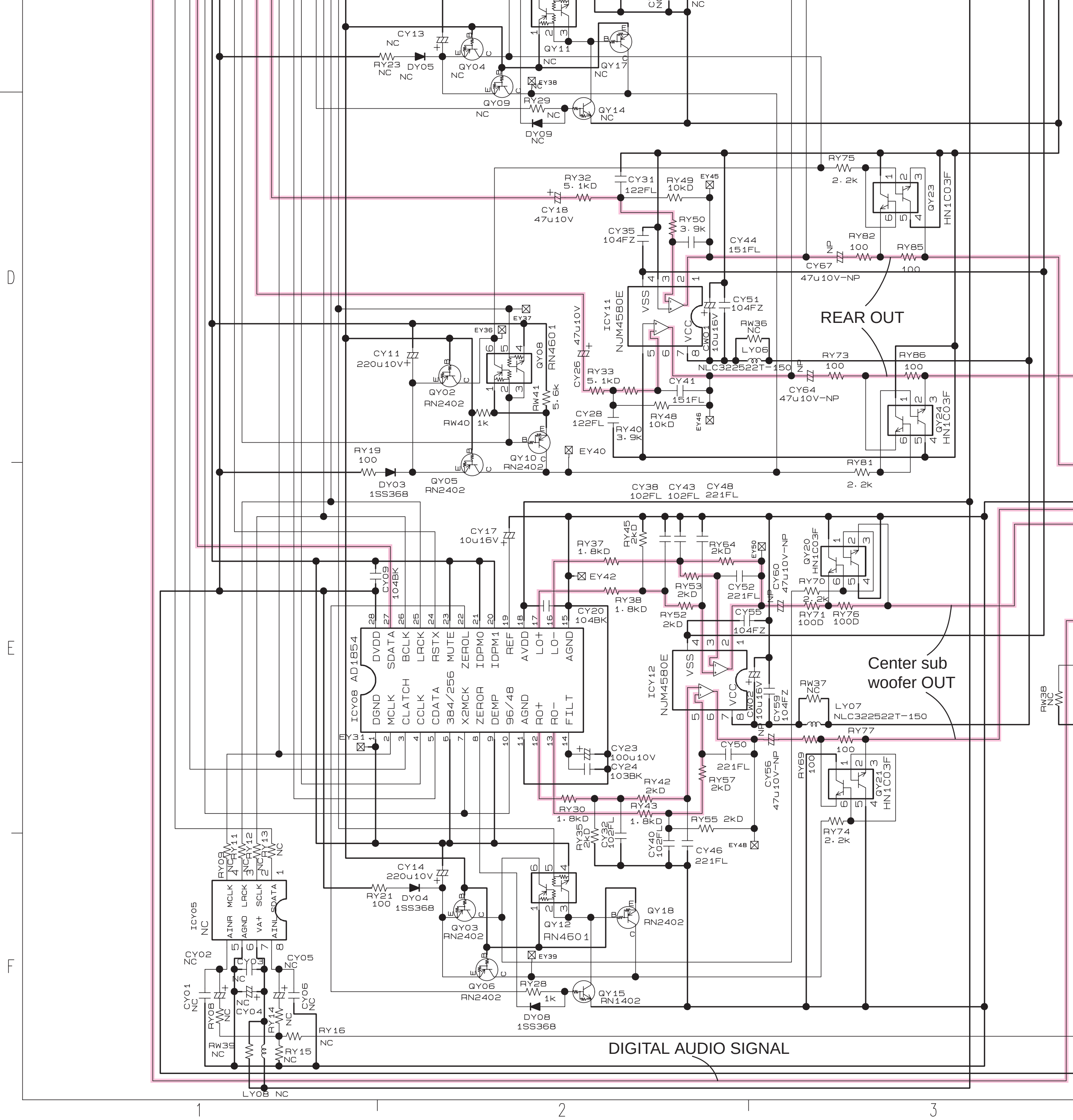
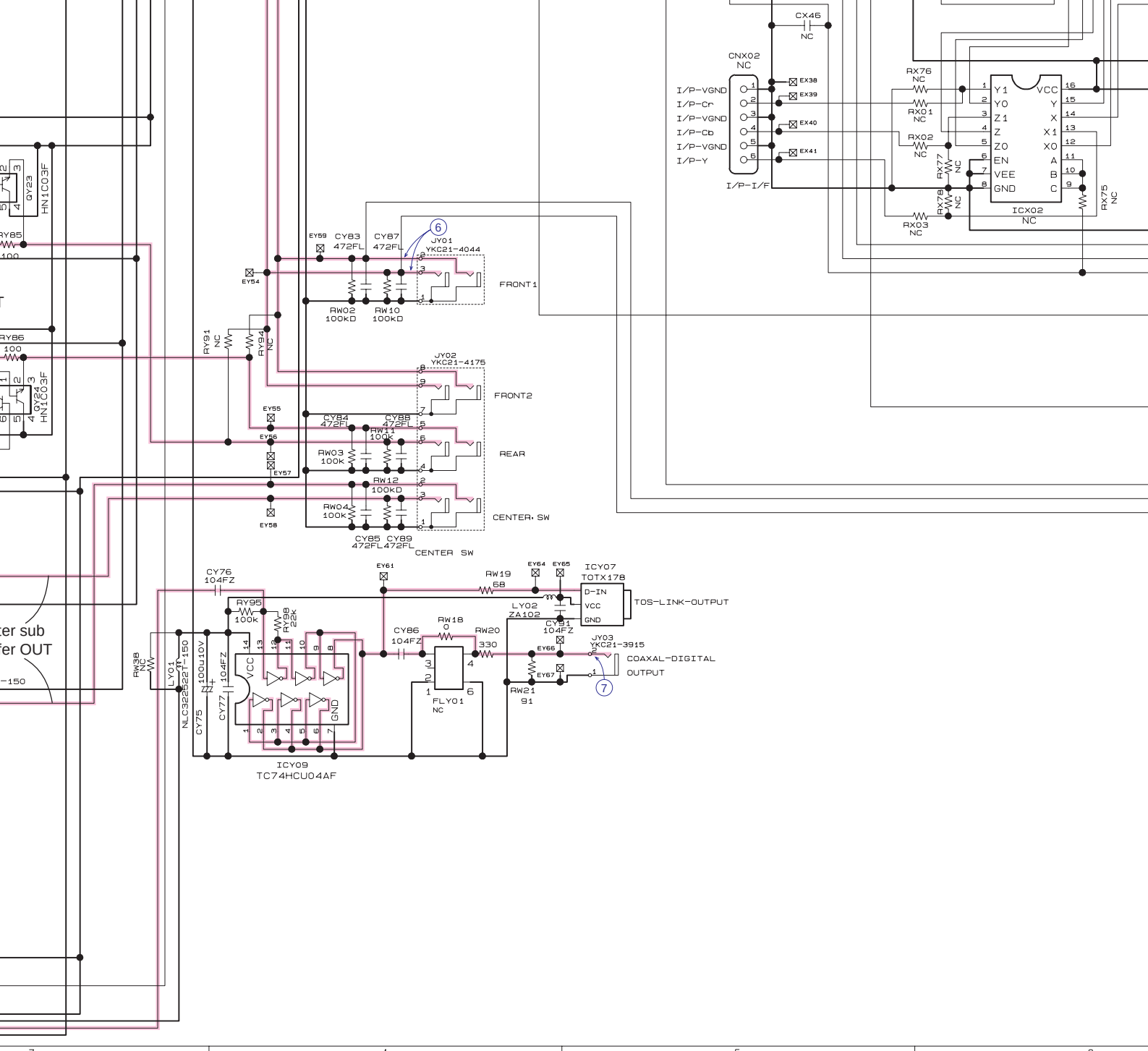
RX40
RX41
RX45
RX48
RX50
RX51
RX52
RX53
RX54
RX56
RX57
RX58
RX59
RX60
RX61
RX62
RX63
RX67
RX68
RX69
RX70
RX72
RX79
RX80
RX81
RX82
RX83
RX84
RX85
NC
0
22k
8.2k
104FZ
100u10V
220CH
1k
10k
12k
4.7k
1.8k
75F
470u6.3V



D
E
F
1
2
3
REAR OUT
Center sub woofer OUT
DIGITAL AUDIO SIGNAL
ICY08 AD1854
DVDD SDATA BCLK LRCK RSTX MUTE ZEROL IDPM0 IDPM1 REF AVDD LO+ LO- AGND
DGND MCLK CLATCH CCLK CDATA 384/256 X2MCK ZEROR DEMP 96/48 AGND RO+ RO- FILT
ICY05 NC
MCLK LRCK SCLK SDATA
AINR AGND VA+ AINL
ICY11 NJM4580E
ICY12 NJM4580E
VSS VCC
QY02 RN2402
QY03 RN2402
QY04 NC
QY05 RN2402
QY06 RN2402
QY08 RN4601
QY09 NC
QY10 RN2402
QY11 NC
QY12 RN4601
QY14 NC
QY15 RN1402
QY17 NC
QY18 RN2402
QY20 HN1C03F
QY21 HN1C03F
QY23 HN1C03F
QY24 HN1C03F
CY09 104BK
CY11 220u10V
CY13 NC
CY14 220u10V
CY17 10u16V
CY18 47u10V
CY20 104BK
CY23 100u10V
CY24 103BK
CY26 47u10V
CY28 122FL
CY31 122FL
CY32 102FL
CY35 104FZ
CY38 102FL
CY40 102FL
CY41 151FL
CY43 102FL
CY44 151FL
CY46 221FL
CY48 221FL
CY50 221FL
CY51 104FZ
CY52 221FL
CY55 104FZ
CY56 47u10V-NP
CY59 104FZ
CY60 47u10V-NP
CY64 47u10V-NP
CY67 47u10V-NP
CW01 10u16V
CW02 10u16V
RY19 100
RY21 100
RY23 NC
RY28 1k
RY29 NC
RY30 1.8kD
RY32 5.1kD
RY33 5.1kD
RY35 2kD
RY37 1.8kD
RY38 1.8kD
RY40 3.9k
RY42 2kD
RY43 1.8kD
RY45 2kD
RY48 10kD
RY49 10kD
RY50 3.9k
RY52 2kD
RY53 2kD
RY55 2kD
RY57 2kD
RY64 2kD
RY69 100
RY70 2.2k
RY71 100D
RY73 100
RY74 2.2k
RY75 2.2k
RY76 100D
RY77 100
RY81 2.2k
RY82 100
RY85 100
RY86 100
RW36 NC
RW37 NC
RW38 NC
RW39 NC
RW40 1k
RW41 5.6k
LY06 NLC322522T-150
LY07 NLC322522T-150
LY08 NC
DY03 1SS368
DY04 1SS368
DY05 NC
DY08 1SS368
DY09 NC
EY31 EY36 EY37 EY38 EY39 EY40 EY42 EY45 EY46 EY48 EY50


CX45
NC
CNX02
NC
I/P-VGND
I/P-Cr
I/P-VGND
I/P-Cb
I/P-VGND
I/P-Y
I/P-I/F
EX38
EX39
EX40
EX41
RX76
NC
RX01
NC
RX02
NC
RX03
NC
RX77
NC
RX78
NC
RX75
NC
Y1
Y0
Z1
Z
ZO
EN
VEE
GND
VCC
Y
X
X1
XO
A
B
C
ICX02
NC
HN1C03F
GY23
GY24
RY85
RY86
100
EY59
CY83
472FL
CY87
472FL
JY01
YKC21-4044
FRONT1
EY54
RW02
100kD
RW10
100kD
RY91
NC
RY94
NC
JY02
YKC21-4175
FRONT2
EY55
EY56
CY84
472FL
CY88
472FL
RW11
100k
REAR
RW03
100k
EY57
RW12
100kD
RW04
100k
EY58
CENTER. SW
CY85
472FL
CY89
472FL
CENTER SW
CY76
104FZ
EY61
RW19
68
EY64
EY65
ICY07
TOTX178
D-IN
VCC
GND
TOS-LINK-OUTPUT
LY02
ZA102
CY91
104FZ
RY95
100k
RY98
22k
RW18
0
CY86
104FZ
RW20
330
EY66
JY03
YKC21-3915
COAXAL-DIGITAL
OUTPUT
EY67
RW21
91
RW38
NC
LY01
NLC322522T-150
CY75
100u10V
CY77
104FZ
VCC
GND
FLY01
NC
ICY09
TC74HCU04AF
6
7
ter sub
fer OUT
-150

3 4 5 6

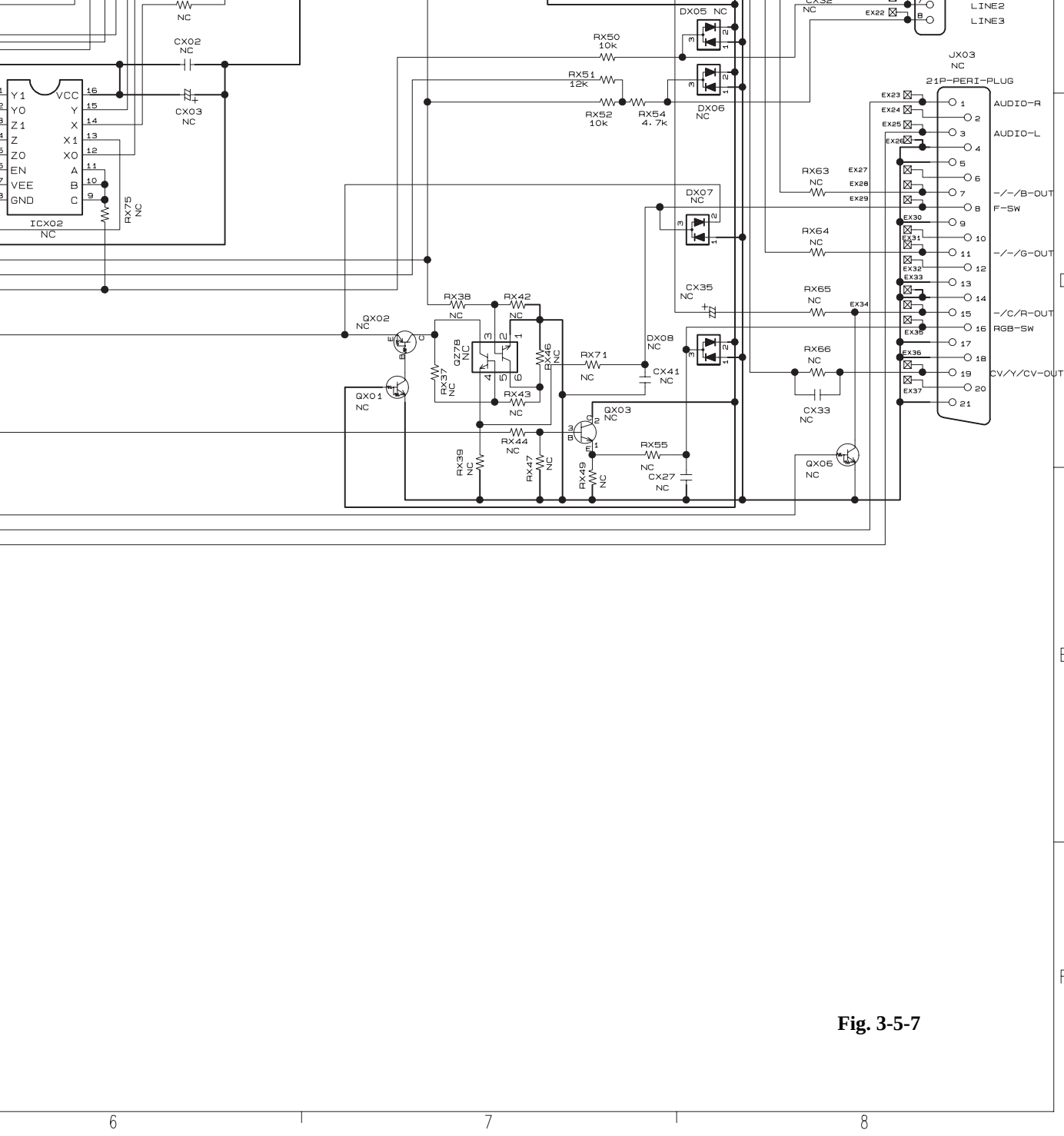
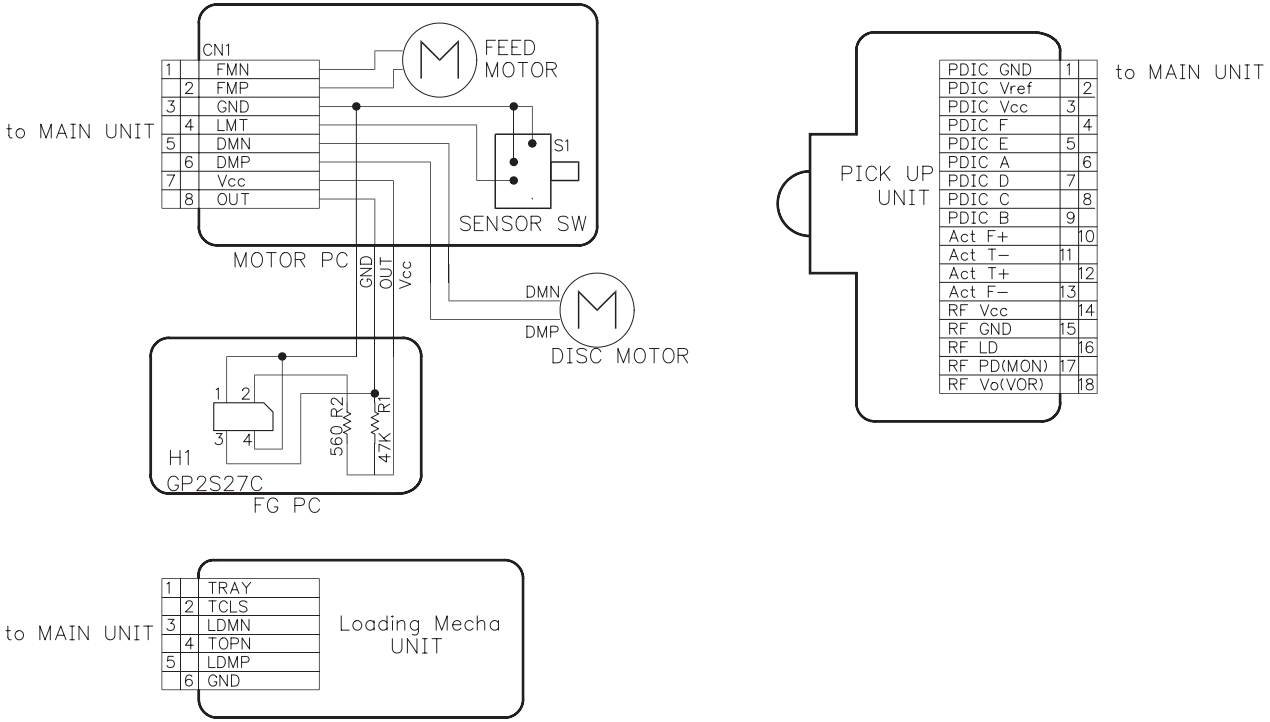

CX02
NC
CX03
NC
ICX02
NC
RX75
NC
RX50
10k
RX51
12k
RX52
10k
RX54
4.7k
DX05 NC
DX06
NC
DX07
NC
DX08
NC
CX32
NC
EX22
LINE2
LINE3
JX03
NC
21P-PERI-PLUG
EX23
EX24
EX25
EX26
AUDIO-R
AUDIO-L
RX63
NC
EX27
EX28
EX29
-/-/B-OUT
F-SW
RX64
NC
-/-/G-OUT
CX35
NC
RX65
NC
EX34
-/C/R-OUT
RGB-SW
RX66
NC
CX33
NC
CV/Y/CV-OUT
EX30
EX31
EX32
EX33
EX35
EX36
EX37
QX02
NC
RX38
NC
RX42
NC
QZ78
NC
RX37
NC
RX46
NC
RX71
NC
CX41
NC
QX01
NC
RX43
NC
QX03
NC
RX44
NC
RX55
NC
CX27
NC
RX39
NC
RX47
NC
RX49
NC
QX06
NC
D
E
F
6
7
8

Fig. 3-5-7

5-5. Motor System Circuit Diagram

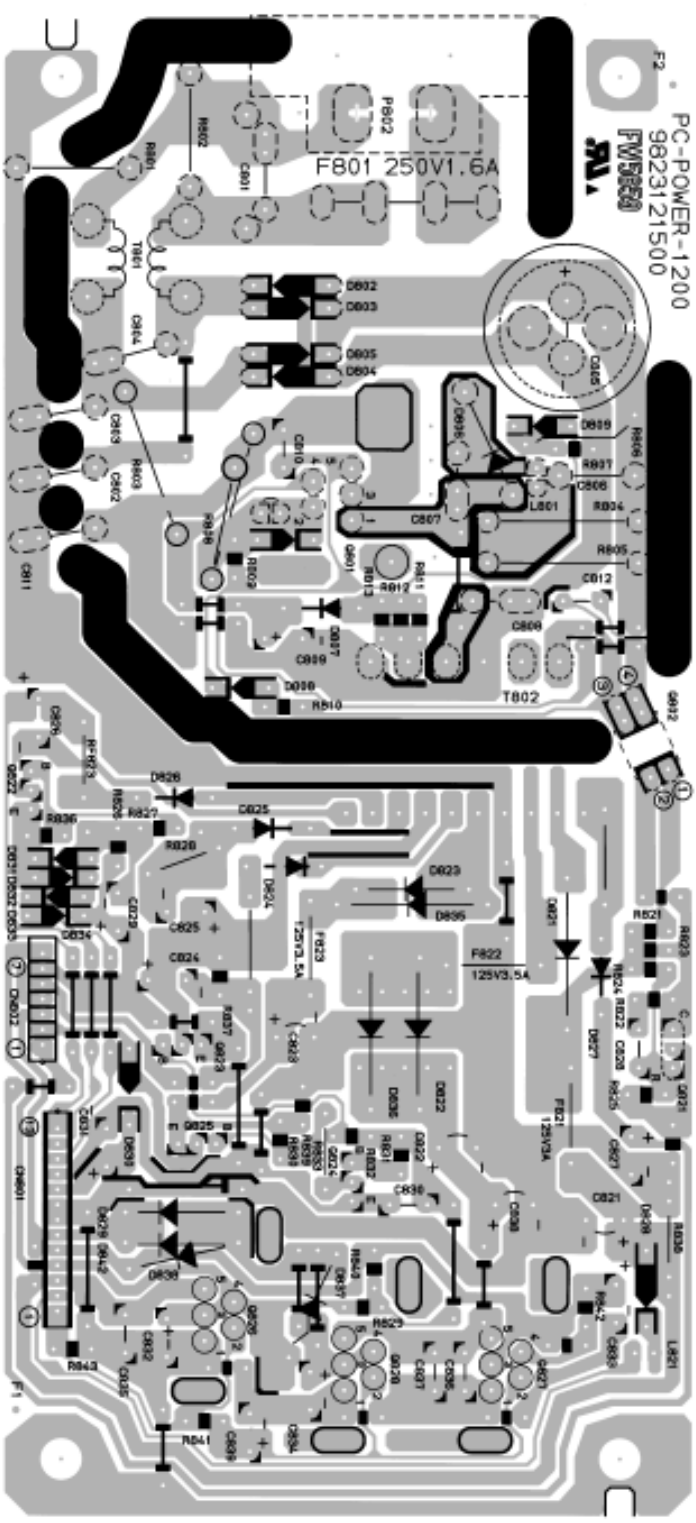


Part No.	Location
CN1	B3
R1	D4
R2	D3
S1	C4

Fig. 3-5-8

6. PC BOARDS

6-1. Power Supply PC Board



Part No.	Location	Part No.	Location
C801	B2	F821	F3
C802	C1	F822	E2
C803	C1	F823	E3
C804	C2	L801	C3
C805	C3	L821	F3
C806	C3	P802	B2
C807	C3	Q801	D2
C808	D3	Q802	D3
C809	D2	Q821	E3
C810	C2	Q822	D1
C811	D1	Q824	F2
C812	D3	Q825	F2
C821	F3	Q826	F2
C822	F3	Q827	F3
C823	E3	Q828	F2
C824	E2	Q829	E2
C825	E2	R801	B2
C826	D1	R802	B2
C827	F3	R803	C2
C828	E3	R804	C3
C829	E2	R805	C3
C830	F2	R806	C3
C831	F1	R807	C3
C832	F2	R808	C2
C833	F3	R809	D2
C834	G2	R810	D2
C835	G1	R811	D3
C836	F3	R812	D2
C837	F3	R813	D2
C838	F3	R821	E3
C839	G2	R822	E3
CN801	F1	R823	E3
CN802	E1	R824	E3
D802	C2	R825	E3
D803	C2	R826	D1
D804	C2	R827	D2
D805	C2	R828	E2
D806	C3	R829	F2
D807	D2	R830	F2
D808	D2	R831	F2
D809	C3	R832	F2
D821	E3	R833	F2
D822	E3	R836	D1
D823	E3	R837	E2
D824	E2	R838	F3
D825	D2	R839	F2
D826	D2	R840	F2
D827	E3	R841	G2
D828	F3	R842	F3
D829	F1	R843	F1
D830	F2	RF823	D2
D831	E1	T801	B2
D832	E1	T802	D3
D833	E1		
D834	E1		
D835	E3		
D836	E2		
D837	F2		
D838	F2		
D842	F1		

Fig. 3-6-1 EU02 Power Supply PC Board (Bottom side)

6-2. Power Switch PC Board

The parts location list shows ex. A1/B1= top side/bottom side.

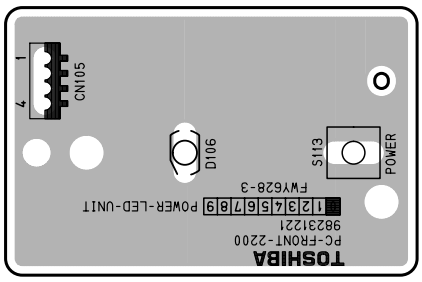


Fig. 3-6-2 EU04
Power Switch PC Board
(Top side)

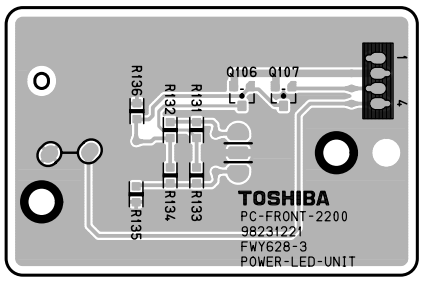


Fig. 3-6-3 EU04
Power Switch PC Board
(Bottom side)

Part No.	Location
CN105	B1/ –
D106	B2/ –
Q106	– /B4
Q107	– /B4
R131	– /B4
R132	– /B3
R133	– /B4
R134	– /B3
R135	– /B3
R136	– /B3
S113	B2/ –

6-3. Disc LED PC Board

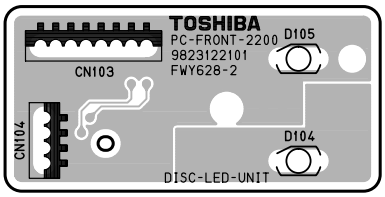


Fig. 3-6-4 EU18
Disc LED PC Board
(Top side)

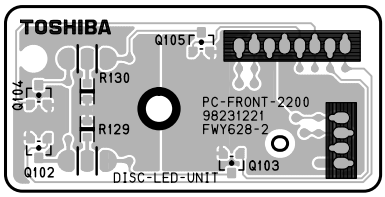


Fig. 3-6-5 EU18
Disc LED PC Board
(Bottom side)

Part No.	Location
CN103	D1/ –
CN104	D1/ –
D104	D2/ –
D105	D2/ –
Q102	– /E3
Q103	– /D4
Q104	– /D3
Q105	– /D3
R129	– /D3
R130	– /D3

6-4. Main PC Board

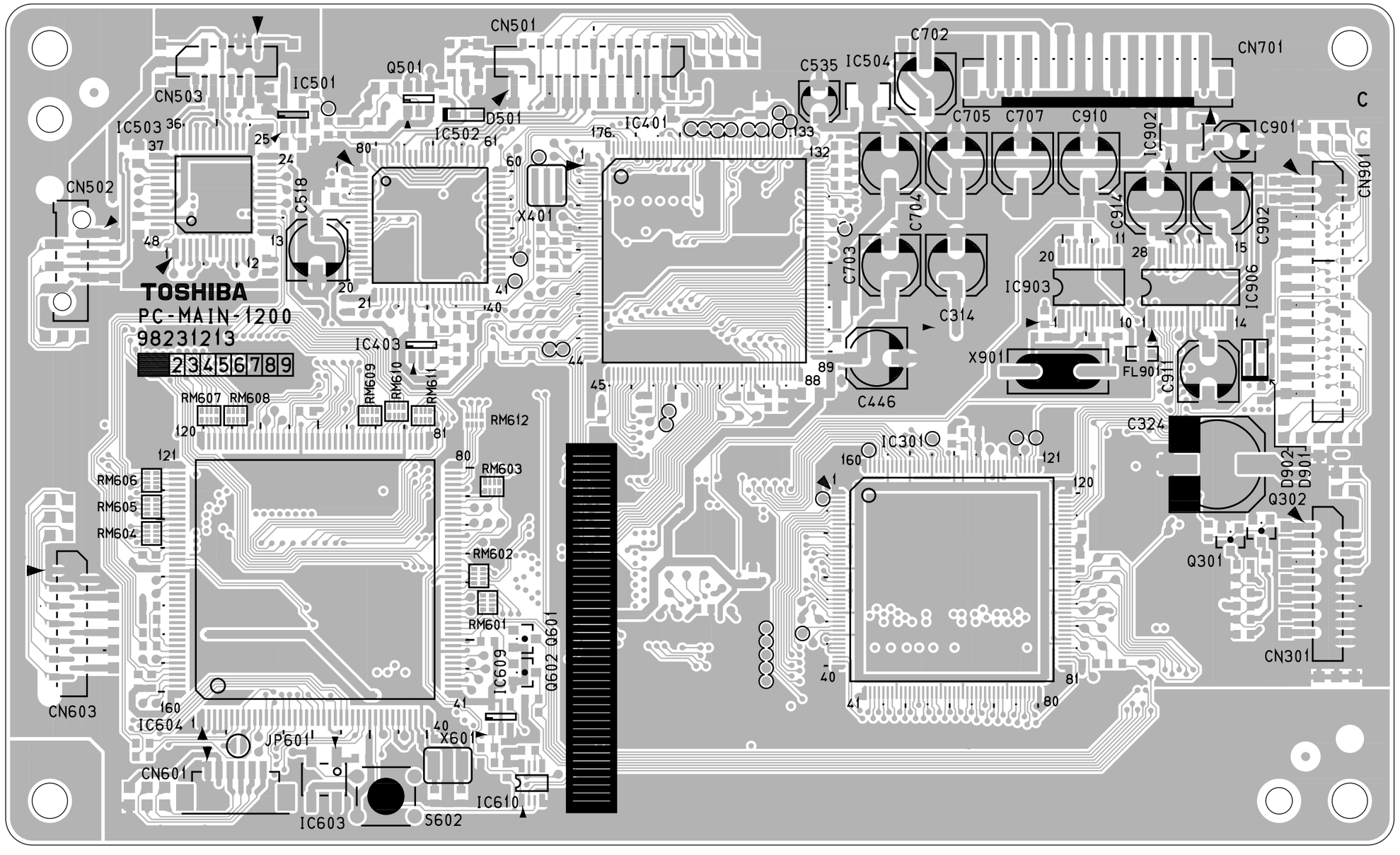


Fig. 3-6-6 EU01 Main PC Board (Top pattern and character/symbol)

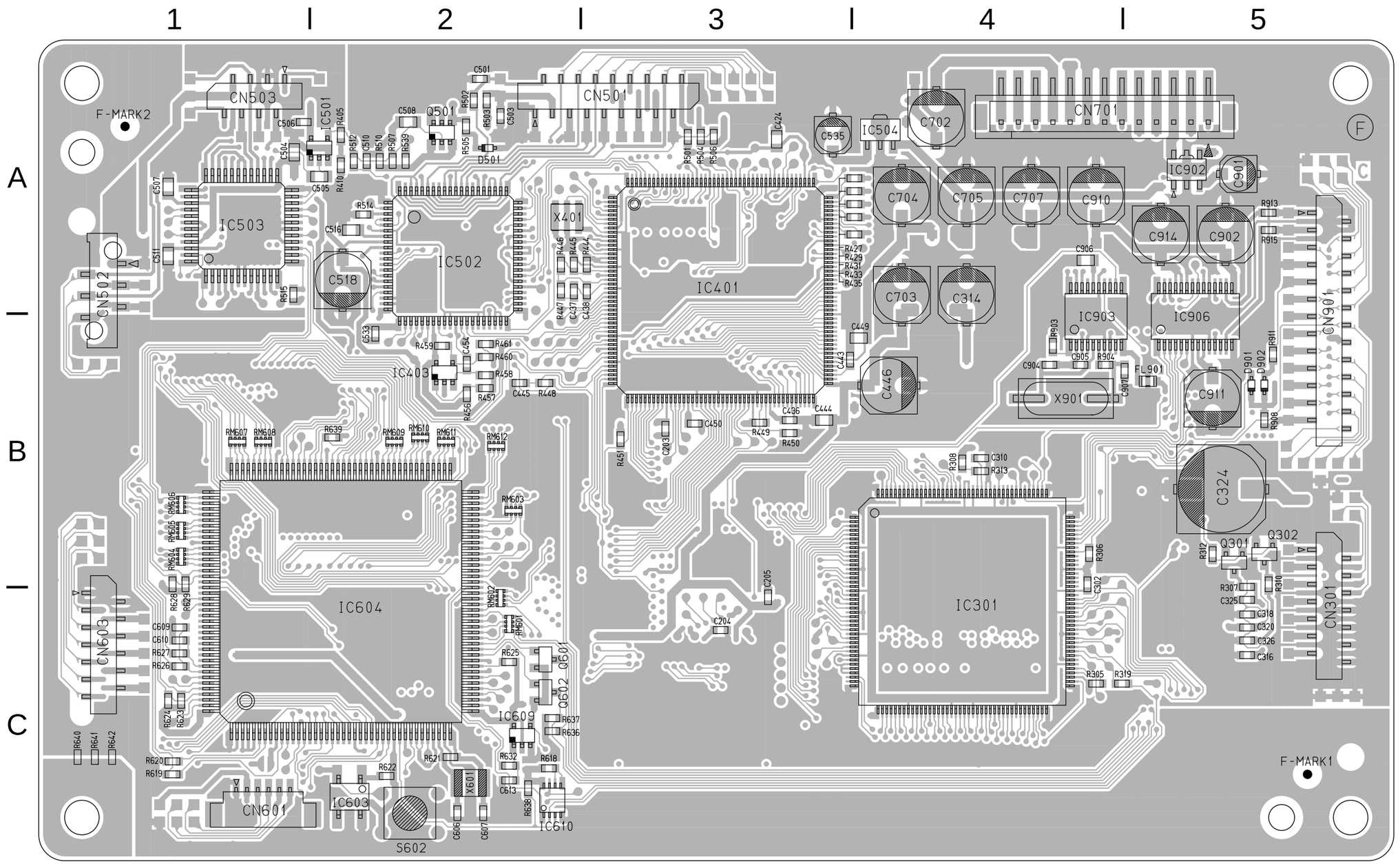


Fig. 3-6-7 EU01 Main PC Board (Top pattern and Top parts location diagram)

Part No.	Location
C203	B3
C204	C3
C205	C3
C302	B4
C310	B4
C314	A4
C316	C5
C318	C5
C320	C5
C324	B5
C325	C5
C326	C5
C424	A3
C436	B3
C437	A2
C438	A3
C443	B3
C444	B3
C445	B2
C446	B4
C449	B4
C450	B3
C454	B2
C501	A2
C503	A2
C504	A1
C505	A2
C506	A1
C507	A1
C508	A2
C510	A2
C511	A1
C516	A2
C518	A2
C533	B2
C535	A3
C606	C2
C607	C2
C609	C1
C610	C1
C613	C2
C702	A4
C703	A4
C704	A4
C705	A4
C707	A4
C901	A5
C902	A5
C904	B4
C905	B4
C906	A4
C907	B5
C910	A4
C911	B5
C914	A5
CN301	C5
CN501	A3
CN502	A1
CN503	A1
CN601	C1
CN603	C1
CN701	A4
CN901	B5
D501	A2
D901	B5
D902	B5
FL901	B5
IC301	C4
IC401	A3
IC403	B2
IC501	A2
IC502	A2
IC503	A1
IC504	A4
IC603	C2
IC604	C2
IC609	C2
IC610	C2
IC902	A5
IC903	B4
IC906	B5
Q301	B5
Q302	B5
Q501	A2
Q601	C2
Q602	C2
R305	C4
R306	B4
R307	B5
R308	B4
R310	B5
R312	B5
R313	B4
R319	C4
R405	A2
R410	A2
R427	A4
R429	A4
R431	A4
R433	A4
R435	A4
R444	A3
R445	A2
R446	A2
R447	A2
R448	B2
R449	B3
R450	B3
R451	B3
R456	B2
R457	B2
R458	B2
R459	B2
R460	B2
R461	B2
R501	A3
R502	A2
R503	A2
R504	A3
R505	A2
R506	A3
R507	A2
R510	A2
R512	A2
R514	A2
R515	A1
R539	A2
R618	C2
R619	C1
R620	C1
R621	C2
R622	C2
R623	C1
R624	C1
R625	C2
R626	C1
R627	C1
R628	B1
R629	B1
R632	C2
R636	C2
R637	C2
R638	C2
R639	B2
R640	C1
R641	C1
R642	C1
R903	B4
R904	B4
R908	B5
R911	B5
R913	A5
R915	A5
RM601	C2
RM602	C2
RM603	B2
RM604	B1
RM605	B1
RM606	B1
RM607	B1
RM608	B1
RM609	B2
RM610	B2
RM611	B2
RM612	B2
S602	C2
X401	A2
X601	C2
X901	B4

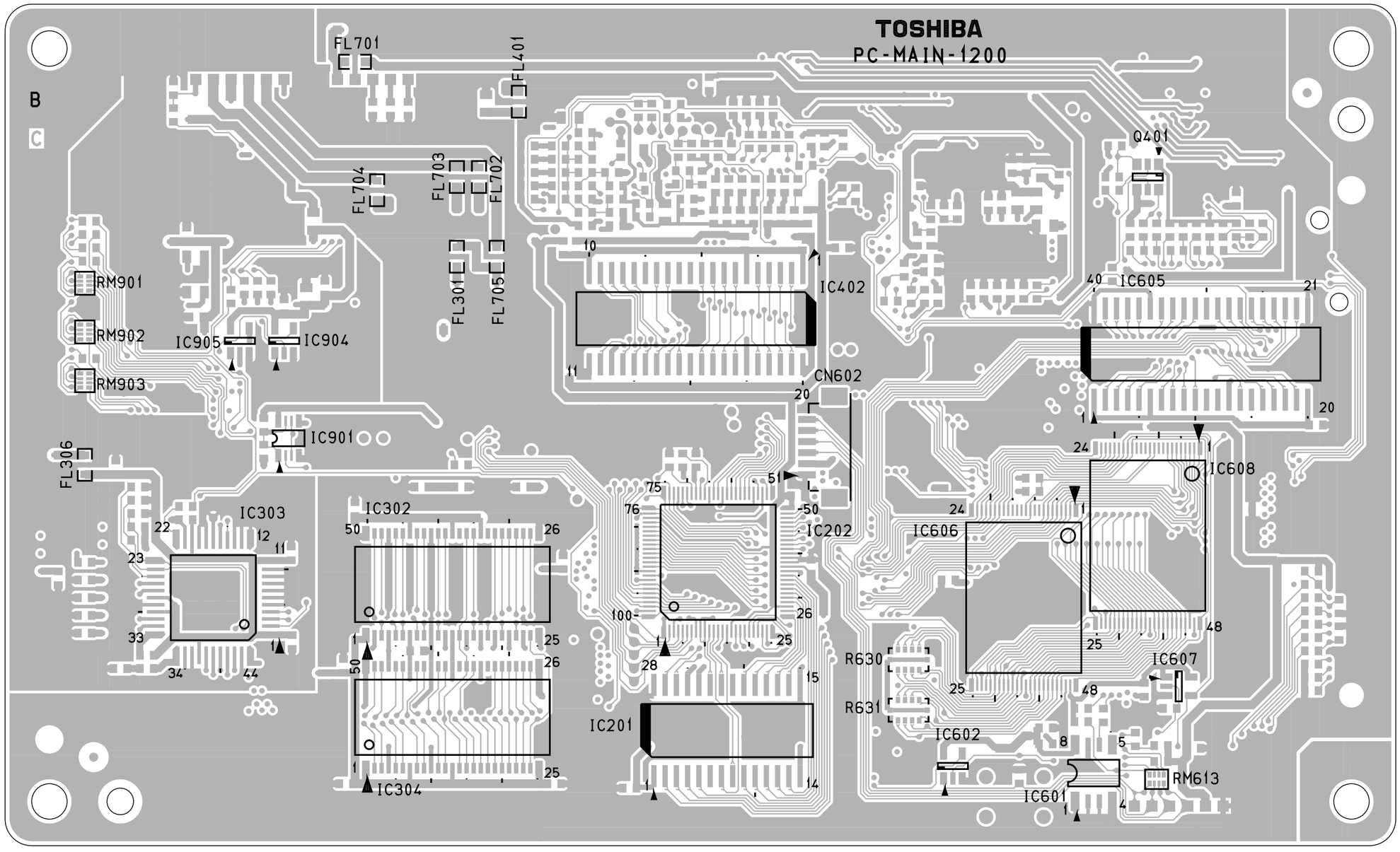


Fig. 3-6-8 EU01 Main PC Board (Bottom pattern and character/symbol)

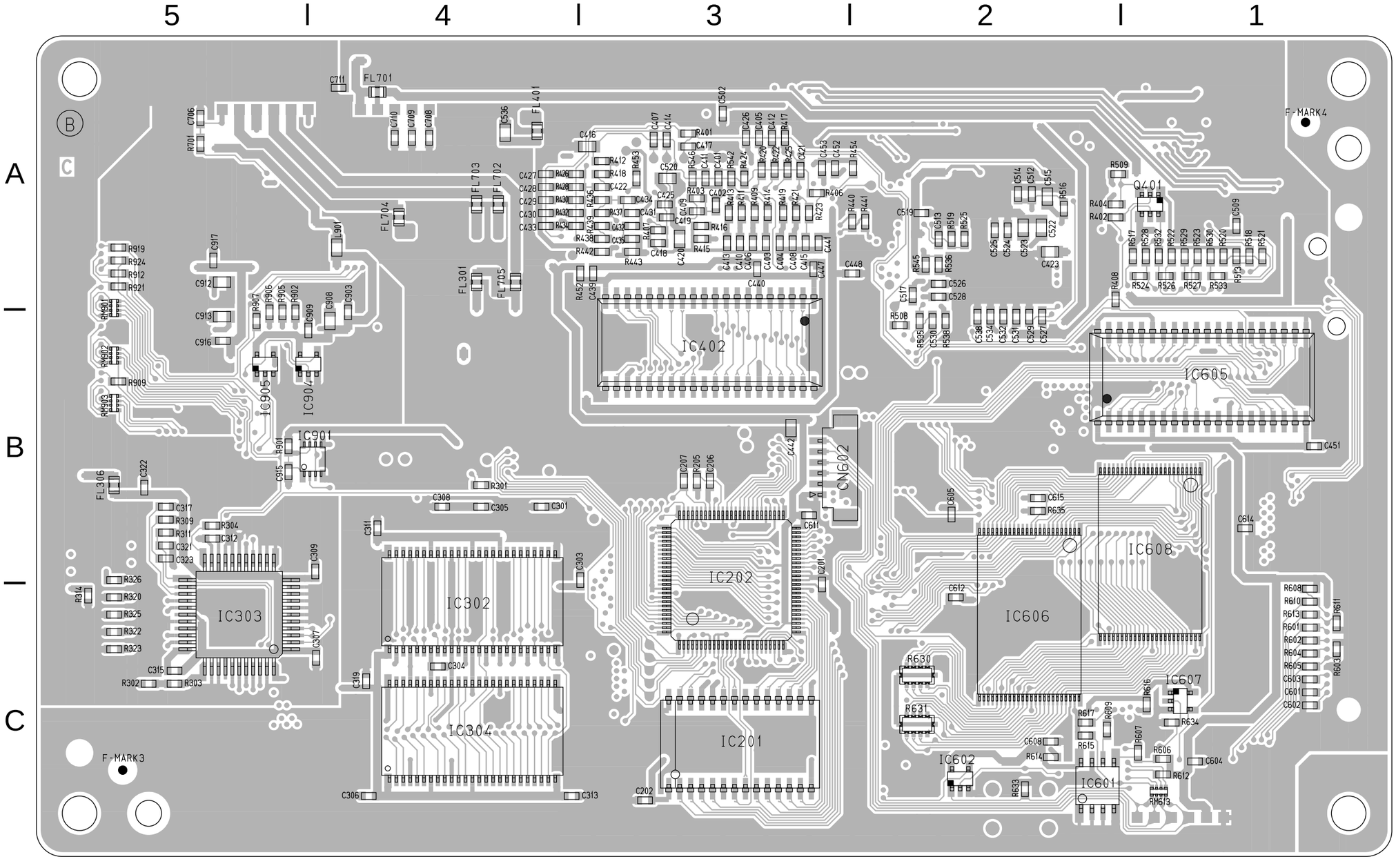


Fig. 3-6-9 EU01 Main PC Board (Bottom pattern and Bottom parts location diagram)

Part No.	Location
C201	C3
C202	C3
C206	B3
C207	B3
C301	B4
C303	B3
C304	C4
C305	B4
C306	C4
C307	C4
C308	B4
C309	B4
C311	B4
C312	B5
C313	C4
C315	C5
C317	B5
C319	C4
C321	B5
C322	B5
C323	B5
C401	A3
C402	A3
C403	A3
C404	A3
C405	A3
C406	A3
C407	A3
C408	A3
C409	A3
C410	A3
C411	A3
C412	A3
C413	A3
C414	A3
C415	A3
C416	A3
C417	A3
C418	A3
C419	A3
C420	A3
C421	A3
C422	A3
C423	A2
C425	A3
C426	A3
C427	A4
C428	A4
C429	A4
C430	A4
C431	A3
C432	A3
C433	A4
C434	A3
C435	A3
C439	A3
C440	A3
C441	A3
C442	B3
C447	A3
C448	A2
C451	B1
C452	A3
C453	A3
C502	A3
C509	A1
C512	A2
C513	A2
C514	A2
C515	A2
C517	A2
C519	A2
C520	A3
C522	A2
C523	A2
C524	A2
C525	A2
C526	A2
C527	B2
C528	A2
C529	B2
C530	B2
C531	B2
C532	B2
C534	B2
C536	A4
C538	B2
C601	C1
C602	C1
C603	C1
C604	C1
C605	B2
C608	C2
C611	B3
C612	C2
C614	B1
C615	B2
C706	A5
C708	A4
C709	A4
C710	A4
C711	A4
C903	B4
C908	B4
C909	B4
C912	A5
C913	B5
C915	B5
C916	B5
C917	A5
CN602	B3
FL301	A4
FL306	B5
FL401	A4
FL701	A4
FL702	A4
FL703	A4
FL704	A4
FL705	A4
IC201	C3
IC202	B3
IC302	C4
IC303	C5
IC304	C4
IC402	B3
IC601	C2
IC602	C2
IC605	B1
IC606	C2
IC607	C1
IC608	B1
IC901	B4
IC904	B4
IC905	B5
L901	A4
Q401	A1
R205	B3
R301	B4
R302	C5
R303	C5
R304	B5
R309	B5
R311	B5
R314	C5
R320	C5
R322	C5
R323	C5
R325	C5
R326	B5
R401	A3
R402	A2
R403	A3
R404	A2
R406	A3
R407	A3
R408	A2
R409	A3
R411	A3
R412	A3
R413	A3
R414	A3
R415	A3
R416	A3
R417	A3
R418	A3
R419	A3
R420	A3
R421	A3
R422	A3
R423	A3
R424	A3
R425	A3
R426	A4
R428	A4
R430	A4
R432	A4
R434	A4
R436	A3
R437	A3
R438	A3
R439	A3
R440	A2
R441	A2
R442	A3
R443	A3
R452	A3
R453	A3
R454	A2
R508	B2
R509	A2
R513	A1
R516	A2
R517	A1
R518	A1
R519	A2
R520	A1
R521	A1
R522	A1
R523	A1
R524	A1
R525	A2
R526	A1
R527	A1
R528	A1
R529	A1
R530	A1
R532	A1
R533	A1
R535	B2
R536	A2
R538	B2
R542	A3
R545	A2
R546	A3
R601	C1
R602	C1
R603	C1
R604	C1
R605	C1
R606	C1
R607	C1
R608	C1
R609	C2
R610	C1
R611	C1
R612	C1
R613	C1
R614	C2
R615	C2
R616	C1
R617	C2
R630	C2
R631	C2
R633	C2
R634	C1
R635	B2
R701	A5
R901	B5
R902	B5
R905	B5
R906	B5
R907	B5
R909	B5
R912	A5
R919	A5
R921	A5
R924	A5
RM613	C1
RM901	A5
RM902	B5
RM903	B5

6-5. Output PC Board

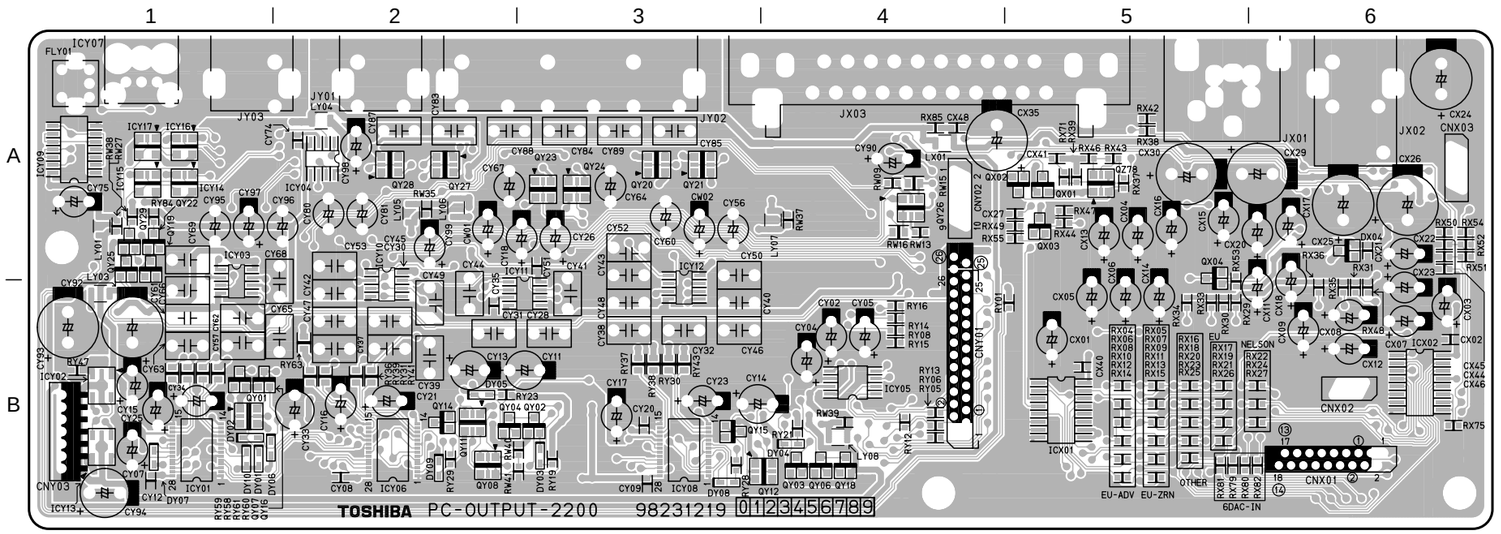


Fig. 3-6-10 EU05 Output PC Board (Top side)

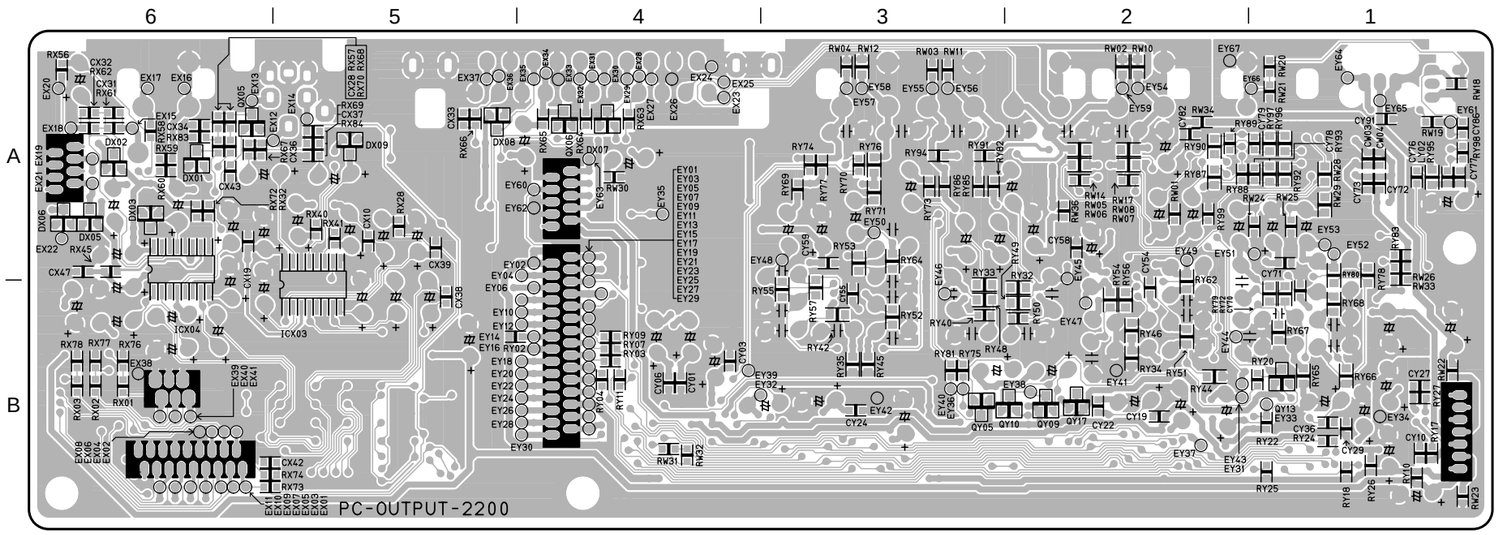


Fig. 3-6-11 EU05 Output PC Board (Bottom side)

Part No.	Location
CNX1	B6
CNX2	B6
CNX3	A6
CNY1	B4
CNY2	A4
CNY3	B1
CW1	A2
CW2	A3
CX1	B5
CX2	B6
CX3	B6
CX4	A5
CX5	B5
CX6	B5
CX7	B6
CX8	B6
CX9	B6
CX11	B6
CX12	B6
CX13	A5
CX14	B5
CX15	A5
CX16	A5
CX17	A6
CX18	B6
CX20	A6
CX21	A6
CX22	A6
CX23	B6
CX24	A6
CX25	A6
CX26	A6
CX27	A5
CX29	A5
CX30	A5
CX35	A4
CX40	B5
CX41	A5
CX44	A6
CX45	A6
CX46	A6
CX48	A4
CY2	B4
CY4	B4
CY5	B4
CY7	B1
CY8	B2
CY9	B3
CY11	B2
CY12	B1
CY13	B2
CY14	B3
CY15	B1
CY16	B2
CY17	B3
CY18	A3
CY20	B3
CY21	B2
CY23	B3
CY25	B1
CY26	A3
CY28	B3
CY30	B2
CY31	B2
CY32	B3
CY33	B2
CY34	B1
CY35	B2
CY37	B2
CY38	B3
CY39	B2
CY40	B3
CY41	B3
CY42	B2
CY43	A3
CY44	B2
CY45	B2
CY46	B3
CY47	B2
CY48	B3
CY50	A3
CY51	A3
CY52	A3
CY53	A2
CY56	A3
CY57	B1
CY60	A3
CY61	B1
CY62	B1
CY63	B1
CY64	A3
CY65	B2
CY66	B1
CY67	A2
CY68	B2
CY69	A1
CY74	A2
CY75	A1
CY80	A2
CY81	A2
CY83	A2
CY84	A3
CY85	A3
CY87	A2
CY88	A2
CY89	A3
CY90	A4
CY92	B1
CY93	B1
CY94	B1
CY95	A1
CY96	A2
CY97	A1
CY98	A2
CY99	A2
DX4	A6
DY1	B1
DY2	B1
DY3	B3
DY4	B4
DY5	B2
DY6	B1
DY7	B1
DY8	B3
DY9	B2
DY10	B1
FLY1	A1
ICX1	B5
ICX2	B6
ICY1	B1
ICY2	B1
ICY3	B1
ICY4	A2
ICY5	B4
ICY6	B2
ICY7	A1
ICY8	B3
ICY9	A1
ICY10	B2
ICY11	B3
ICY12	B3
ICY13	B1
ICY14	A1
ICY15	A1
ICY16	A1
ICY17	A1
LX1	A4
LY1	A1
LY3	B1
LY4	A2
LY5	A2
LY6	A2
LY7	A4
LY8	B4
QX1	A5
QX2	A5
QX3	A5
QX4	A5
QY1	B1
QY2	B3
QY3	B4
QY4	B2
QY6	B4
QY7	B1
QY8	B2
QY11	B2
QY12	B4
QY14	B2
QY15	B3
QY16	B1
QY17	B2
QY19	A1
QY20	A3
QY21	A3
QY22	A1
QY23	A3
QY24	A3
QY25	A1
QY26	A4
QY27	A2
QY28	A2
QY29	A1
QZ78	A5
RW9	A4
RW13	A4
RW15	A4
RW16	A4
RW27	A1
RW35	A2
RW37	A4
RW38	A1
RW39	B4
RW40	B3
RW41	B3
RX4	B5
RX5	B5
RX6	B5
RX7	B5
RX8	B5
RX9	B5
RX10	B5
RX11	B5
RX12	B5
RX13	B5
RX14	B5
RX15	B5
RX16	B5
RX17	B5
RX18	B5
RX19	B5
RX20	B5
RX21	B5
RX22	B6
RX23	B5
RX24	B6
RX25	B5
RX26	B5
RX27	B6
RX29	B5
RX30	B5
RX31	B6
RX33	B5
RX34	B5
RX35	B6
RX36	B6
RX37	A5
RX38	A5
RX39	A5
RX42	A5
RX43	A5
RX44	A5
RX45	A5
RX46	A5
RX48	A5
RX50	B5
RX51	B5
RX52	B5
RX53	B5
RX54	A6
RX55	A5
RX61	B1
RX62	B1
RX63	B2
RY84	A1

Part No.	Location
CW3	A1
CW4	A1
CX10	A5
CX19	A6
CX28	A6
CX31	A6
CX32	A6
CX33	A5
CX34	A6
CX36	A6
CX37	A5
CX38	B5
CX39	A5
CX42	B6
CX43	A6
CX47	A6
CY1	B4
CY3	B4
CY6	B4
CY10	B1
CY19	B2
CY22	B2
CY24	B3
CY27	B1
CY29	B1
CY36	B1
CY54	B2
CY55	B3
CY58	A2
CY59	A3
CY70	B1
CY71	A1
CY72	A1
CY73	A1
CY76	A1
CY77	A1
CY78	A1
CY79	A1
CY82	A2
CY86	A1
CY91	A1
DX1	A6
DX2	A6
DX3	A6
DX5	A6
DX6	A6
DX7	A4
DX8	A5
DX9	A5
ICX3	B5
ICX4	A6
LY2	A1
QX5	A6
QX6	A4
QY5	B3
QY9	B2
QY10	B2
QY13	B1
QY17	B2
RW1	A2
RW2	A2
RW3	A3
RW4	A3
RW5	A2
RW6	A2
RW7	A2
RW8	A2
RW10	A2
RW11	A3
RW12	A3
RW14	A2
RW17	A2
RW18	A1
RW19	A1
RW20	A1
RW21	A1
RW22	B1
RW23	B1
RW24	A1
RW25	A1
RW26	A1
RW28	A1
RW29	A1
RW30	A4
RW31	B4
RW32	B4
RW33	A1
RW34	A2
RW36	A2
RX1	B6
RX2	B6
RX3	B6
RX28	A5
RX32	A6
RX40	A5
RX41	A5
RX45	A6
RX56	A6
RX57	A6
RX58	A6
RX59	A6
RX60	A6
RX61	A6
RX62	A6
RX63	A4
RX64	A4
RX65	A4
RX66	A5
RX67	A6
RX68	A6
RX69	A5
RX70	A6
RX72	A6
RX73	B6
RX74	B6
RX76	B6
RX77	B6
RX78	B6
RX83	A6
RX84	A5
RY2	B5
RY3	B4
RY4	B4
RY7	B4
RY9	B4
RY10	B1
RY11	B4
RY17	B1
RY18	B1
RY20	B1
RY22	B1
RY24	B1
RY25	B1
RY26	B1
RY27	B1
RY32	B2
RY33	B3
RY34	B2
RY35	B3
RY40	B3
RY42	B3
RY44	B2
RY45	B3
RY46	B2
RY48	B3
RY49	B2
RY50	B2
RY51	B2
RY52	B3
RY54	B2
RY55	B3
RY56	B2
RY57	B3
RY62	B2
RY64	A3
RY65	B1
RY66	B1
RY67	B1
RY68	B1
RY69	A3
RY70	A3
RY71	A3
RY72	B1
RY73	A3
RY74	A3
RY75	B3
RY76	A3
RY77	A3
RY78	A1
RY79	B1
RY80	A1
RY81	B3
RY82	A3
RY83	A1
RY85	A3
RY86	A3
RY87	A2
RY88	A2
RY89	A2
RY90	A2
RY91	A3
RY92	A1
RY93	A1
RY94	A3
RY96	A1
RY97	A1
RY98	A1
RY99	A2

6-6. Front Display PC Board

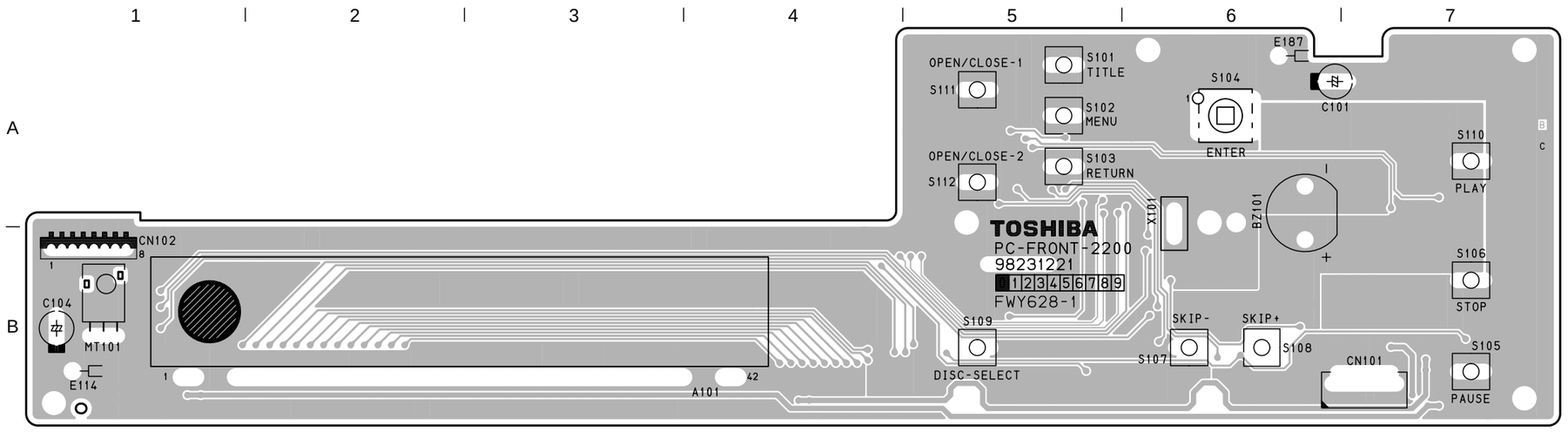


Fig. 3-6-12 EU03 Front Display PC Board (Top Side)

Part No.	Location
A101	B2
BZ101	A6
C101	A6
C104	B1
CN101	B7
CN102	B1
MT101	B1
S101	A5
S102	A5
S103	A5
S104	A6
S105	B7
S106	B7
S107	B6
S108	B6
S109	B5
S110	A7
S111	A5
S112	A5
X101	A6

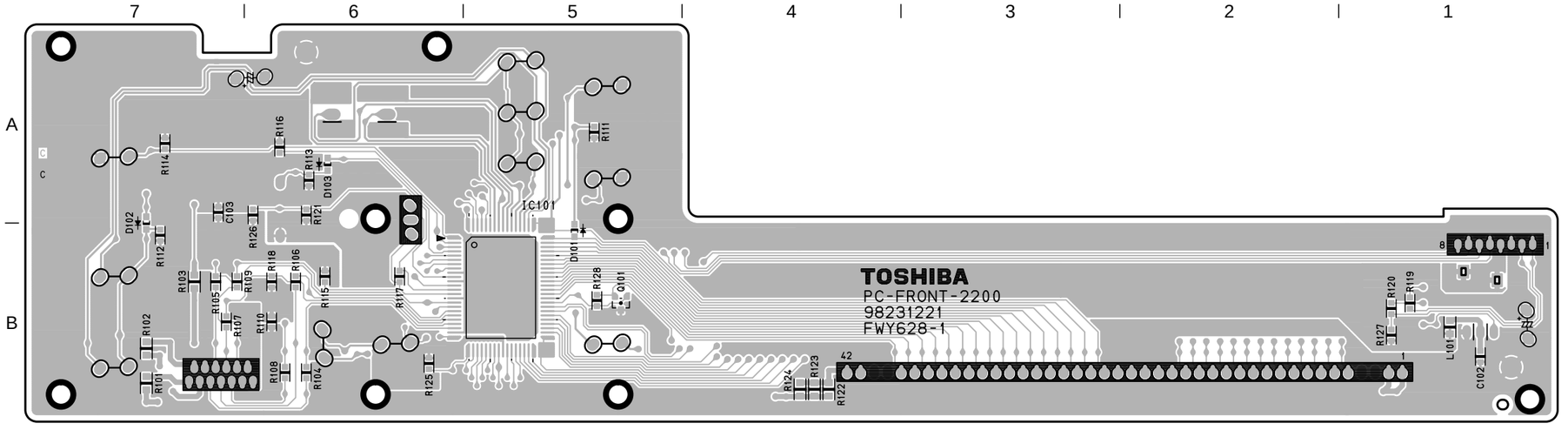


Fig. 3-6-13 EU03 Front Display PC Board (Bottom Side)

Part No.	Location
C102	B1
C103	A7
D101	B5
D102	A7
D103	A6
IC101	B5
L101	B1
Q101	B5
R101	B7
R102	B7
R103	B7
R104	B6
R105	B7
R106	B6
R107	B7
R108	B6
R109	B7
R110	B6
R111	A5
R112	B7
R113	A6
R114	A7
R115	B6
R116	A6
R117	B6
R118	B6
R119	B1
R120	B1
R121	A6
R122	B4
R123	B4
R124	B4
R125	B6
R126	A6
R127	B1
R128	B5

SECTION 4
PARTS LIST

SAFETY PRECAUTION

The parts identified by ! (⚠) mark are critical for safety. Replace only with part number specified.

The mounting position of replacement is to be identical with originals.

The substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

NOTICE

The part number must be used when ordering parts in order to assist in processing, be sure to include the model number and description.

ABBREVIATIONS

1. Integrated Circuit (IC)

2. Capacitor (Cap)

- **Capacitance Tolerance (for Nominal Capacitance more than 10pF)**

Table 4-2-1

Symbol	B	C	D	F	G	J	K	M	N
Tolerance %	± 0.1	± 0.25	± 0.5	± 1	± 2	± 5	± 10	± 20	± 30

Symbol	P	Q	T	U	V	W	X	Y	Z
Tolerance %	+ 100 0	+ 30 – 10	+ 50 – 10	+ 75 – 10	+ 20 – 10	+ 100 – 10	+ 40 – 20	+ 150 – 10	+ 80 – 20

Ex. 10MF J = 10µF ± 5%

- **Capacitance Tolerance (for Nominal Capacitance 10pF or less)**

Table 4-2-2

Symbol	B	C	D	F	G
Tolerance pF	± 0.1	± 0.25	± 0.5	± 1	± 2

Ex. 10pF G = 10pF ± 2pF

3. Resistor (Res)

- **Resistance tolerance**

Table 4-3-1

Symbol	B	C	D	F	G	J	K	M
Tolerance %	± 0.1	± 0.25	± 0.5	± 1	± 2	± 5	± 10	± 20

Ex. 470ohmJ = 470ohm± 5%

4. EXPLODED VIEWS

4-1. Packing Assembly

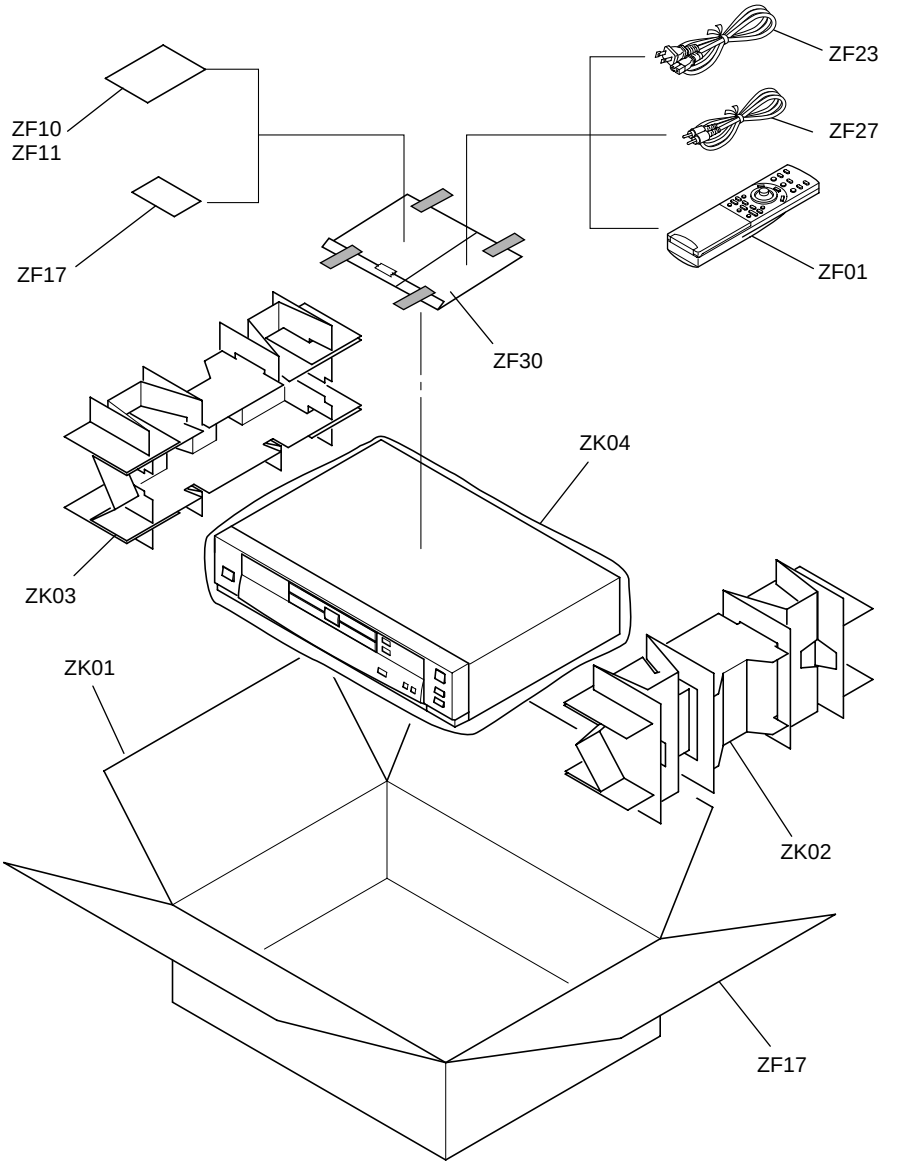


Fig. 4-4-1

4-2. Chassis Assembly

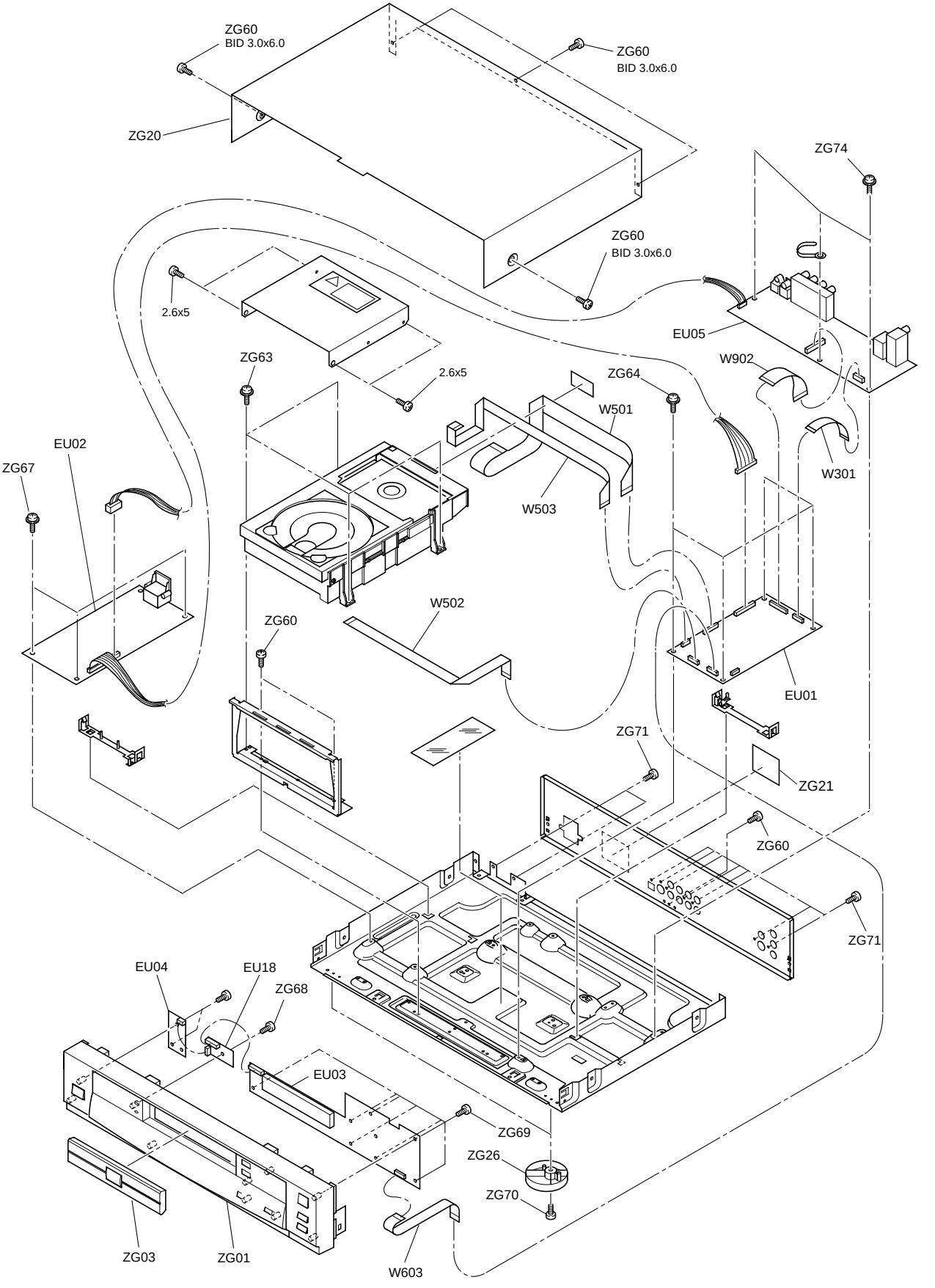


Fig. 4-4-2

4-3. Mechanism Assembly

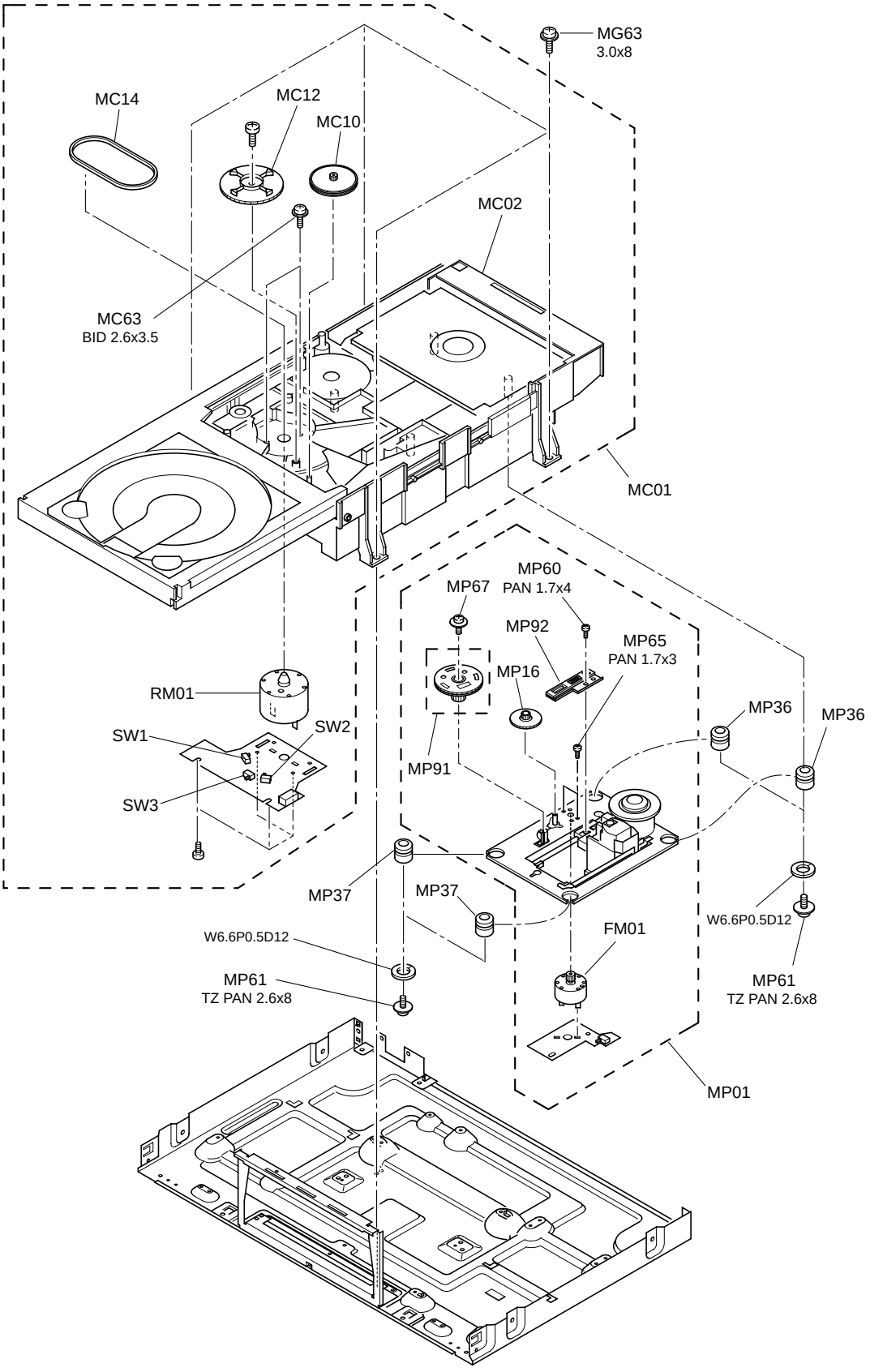


Fig. 4-4-3

5. PARTS LIST

	LOCATION NUMBER	PART NUMBER	DESCRIPTION	
			- MECHANICAL PARTS -	
	FM01	79070421	Motor Assy,Feed	
	MC01	79070426	Chassis Assy	Mechanism
	MC14	79070429	Belt,Loading	
	MP01	79070415	Mechanism Assy,pickup	
	MP16	79070422	Gear	
	MP36	79070424	Dumper,Rubber	Front
	MP37	79070425	Dumper,Rubber	Rear
	MP60	79070020	Screw	1.7x4.0mm
	MP61	79079005	Screw	TZPAN2.6x15
	MP65	79079038	Screw	PAN1.7x3.0
	MP91	79070419	Gear Assy,Kit B	
	MP92	79070420	Gear Assy,Rack	
	RM01	79070430	Motor Assy,Loading	
	SW1	79089033	Switch	Push
	SW2	79089033	Switch	Push
	SW3	79089033	Switch	Push
	W301	79080226	Cable,Flexible	FFC,14P,L70
	W501	79080198	Cable,Flexible	FFC,18P,L370
	W502	79080199	Cable,Flexible	FFC,6P,L180
	W503	79080200	Cable,Flexible	FFC,8P,L380
	W603	79080197	Cable,Flexible	FFC,13P,L150
	W902	79080236	Cable,Flexible	FFC,26P,L120
	ZF01	79078045	Warranty Card	Canada
!	ZF10	79077075	Owners Manual	English
!	ZF11	79077077	Owners Manual	Spanish,USA
!	ZF11	79077076	Owners Manual	French,Canada
	ZF17	79070272	Warranty Card	USA
	ZF17	79070406	Warranty Card	Canada
	ZF20	79070037	Cable,AV	
!	ZF23	79088007	Power Cord	
	ZF26	79070405	Envelope	Canada
	ZF30	79070042	Bag,Polyethylene	
	ZG01	79071110	Front Panel	
	ZG03	79071111	Panel,Tray	
	ZG20	79073037	Cover,Top	
	ZG21	79073057	Label,Rating	
	ZG26	79073036	Foot Assy,Front	
	ZG60	79079008	Screw	STITE3.0x6
	ZG63	79079010	Screw	ZPAN3.0x8
	ZG64	79079009	Screw	ZPAN3.0x6
	ZG67	79079009	Screw	ZPAN3.0x6
	ZG68	79079036	Screw	PTITE2.6x10
	ZG69	79079036	Screw	PTITE2.6x10
	ZG70	79079008	Screw	STITE3.0x6
	ZG71	79079007	Screw	PTITE3.0x6
	ZG74	79079009	Screw	ZPAN3.0x6
	ZK01	79075096	Case	
	ZK02	79075097	Packing,R	
	ZK03	79075098	Packing,L	
	ZK04	79070033	Bag,Polyethylene	
	ZZ01	79070274	Test Disc	DVDZ-9044
	ZZ03	79080074	Kit,Data Update	

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
		- ELECTRICAL PARTS -		
EU01	79083050	PC Board Assy	Main	
		- INTEGRATED CIRCUITS -		
IC201	79040145	IC	NN514800AJ-60T	
IC202	79040154	IC	TC203G08AF-0103Z	
IC301	79040122	IC	MD36710X	
IC302	79040063	IC	HY57V16160ATC-10	
IC303	79040096	IC	ADV7170KS	
IC304	79040063	IC	HY57V16160ATC-10	
IC401	79040224	IC	TC9489F	
IC402	79040148	IC	V53C16128HK-30	
IC501	79040006	IC	TC7S04F	
IC502	79040225	IC	TC1313F	
IC503	79040150	IC	KA3032	
IC504	79040066	IC	UPC29L33T	
IC601	79040226	IC	S-24C01BFJ-TB-0	
IC602	79040007	IC	TC7S08F	
IC603	79040041	IC	PST591-IDT	
IC604	79040230	IC	TMP94CS40AF-1A58	
IC605	79040148	IC	V53C16128HK-30	
IC606	79040153	IC	MBM29F800BA55TN	
IC607	79040007	IC	TC7S08F	
IC609	79040007	IC	TC7S08F	
IC610	79040087	IC	TC7W241FU	
IC901	79040087	IC	TC7W241FU	
IC902	79040102	IC	NJM2370U05	
IC903	79040227	IC	PLL1700E-T	
IC904	79040006	IC	TC7S04F	
IC905	79040006	IC	TC7S04F	
IC906	79040228	IC	PLL1716E-T	
		- TRANSISTORS -		
Q301	79050078	Transistor,Chip	DTC114EKA-T	
Q302	79050078	Transistor,Chip	DTC114EKA-T	
Q401	79050014	Transistor,Chip	HN1C03F	
Q501	79050015	Transistor,Chip	HN1B01F	
Q601	79050031	Transistor,Chip	DTA114EKA	
Q602	79050031	Transistor,Chip	DTA114EKA	
		- MISCELLANEOUS -		
X401	79089021	Oscillator,Ceramic	22.58MHz	
X601	79089022	Oscillator,Ceramic	9.00MHz	
X901	79089003	Oscillator	SMD49,27MHz	
EU02	79085042	PC Board Assy	Power	
		- INTEGRATED CIRCUITS -		
! Q801	79040221	IC	STR-G6551LF1105	
Q821	79040146	IC	TA76431S	
Q826	79040222	IC	SI-3050CALF1101	
Q827	79040223	IC	SI-3033CALF1101	
		- TRANSISTORS -		
! Q802	79050041	Photo Coupler	TLP621(GR)	
Q822	79050076	Transistor	2SA1585STP-Q	
Q823	79050005	Transistor	2SC2236-Y	
Q824	79050077	Transistor	2SC1740STP-Q	
Q825	79050076	Transistor	2SA1585STP-Q	
		- DIODES -		
! D802	79060016	Diode	ERA15-06	
! D803	79060016	Diode	ERA15-06	
! D804	79060016	Diode	ERA15-06	
! D805	79060016	Diode	ERA15-06	
! D806	79060009	Diode	RU-1P	
D807	79060013	Diode	AG01	
D808	79060015	Diode	1SS133	
D821	79060010	Diode	RK46	
D822	79060010	Diode	RK46	
D823	79060008	Diode	RU2YX	
D824	79060013	Diode	AG01	
D825	79060013	Diode	AG01	
D826	79060013	Diode	AG01	
D828	79060012	Diode	ERA15-02	
D830	79060012	Diode	ERA15-02	
D831	79060007	Diode,Zener	UZ3.0BSB	
D832	79060034	Diode,Zener	MTZJT-77-10B	
D833	79060005	Diode,Zener	UZ11BSB	
D834	79060034	Diode,Zener	MTZJT-77-10B	
		- COILS -		
L801	79010024	Coil,Choke	ZBF253D00	
L821	79010024	Coil,Choke	ZBF253D00	
		- CAPACITORS -		
! C801	79020189	Cap,Ceramic	1000pF	M 250V
! C802	79020190	Cap,Ceramic	100pF	M 250V
! C803	79020190	Cap,Ceramic	100pF	M 250V
! C804	79020189	Cap,Ceramic	1000pF	M 250V
C805	79020106	Cap,Electrolytic	100MF	M 200V
! C806	79020016	Cap,Film	0.033MF	J 630V
C807	79020191	Cap,Ceramic	150pF	K 1kV
C808	79020192	Cap,Ceramic	47pF	J 2kV
C809	79020067	Cap,Electrolytic	27MF	M 35V
C810	79020078	Cap,Ceramic	470pF	K 50V
! C811	79020193	Cap,Ceramic	220pF	K 250V
C812	79020069	Cap,Film	0.1MF	J 50V
C821	79020019	Cap,Electrolytic	1200MF	M 10V
C822	79020019	Cap,Electrolytic	1200MF	M 10V
C823	79020020	Cap,Electrolytic	820MF	M 16V
C824	79020077	Cap,Electrolytic	220MF	M 25V
C825	79020002	Cap,Electrolytic	22MF	M 100V
C826	79020077	Cap,Electrolytic	220MF	M 25V
C828	79020021	Cap,Film	0.22MF	J 50V
C829	79020007	Cap,Electrolytic	22MF	M 50V
C830	79020069	Cap,Film	0.1MF	J 50V
C831	79020043	Cap,Electrolytic	470MF	M 16V
C832	79020067	Cap,Electrolytic	27MF	M 35V
C833	79020067	Cap,Electrolytic	27MF	M 35V
C835	79020069	Cap,Film	0.1MF	J 50V
C836	79020069	Cap,Film	0.1MF	J 50V
C839	79020001	Cap,Electrolytic	22MF	M 16V
		- RESISTORS -		
! R802	79030055	Res,Oxide Metal	1Mohm	J 1/2W
R803	79030045	Res,Oxide Metal	56kohm	J 2W
! R804	79030025	Res,Oxide Metal	82kohm	J 2W
! R808	79030011	Res,Oxide Metal	0.47ohm	J 1W
R809	79030032	Res,Carbon	680ohm	J 1/6W
R810	79030033	Res,Carbon	3.3kohm	J 1/6W
R811	79030118	Res,Carbon	56ohm	J 1/4W
R812	79030118	Res,Carbon	56ohm	J 1/4W
R821	79030005	Res,Carbon	150ohm	J 1/6W
R822	79030035	Res,Carbon	2.7kohm	J 1/6W
R823	79030004	Res,Carbon	1kohm	J 1/6W
R824	79030044	Res,Carbon	2.7kohm	G 1/4W
R825	79030041	Res,Carbon	2kohm	G 1/4W
R826	79030002	Res,Carbon	10kohm	J 1/6W
R827	79030033	Res,Carbon	3.3kohm	J 1/6W
R828	79030053	Res,Oxide Metal	560ohm	J 1W
R829	79030004	Res,Carbon	1kohm	J 1/6W
R830	79030004	Res,Carbon	1kohm	J 1/6W
R831	79030006	Res,Carbon	100ohm	J 1/6W
R832	79030006	Res,Carbon	100ohm	J 1/6W
R833	79030119	Res,Oxide Metal	680ohm	J 1/2W
R836	79030002	Res,Carbon	10kohm	J 1/6W
R837	79030033	Res,Carbon	3.3kohm	J 1/6W
R841	79030002	Res,Carbon	10kohm	J 1/6W
		- MISCELLANEOUS -		
! F801	79087002	Fuse	1.6A,250V	
! F821	79070061	Protector	125V,3.0A	
! F822	79070054	Protector	125V,3.5A	
! F823	79070054	Protector	125V,3.5A	
! P802	79089023	Jack	AC Inlet	
! RF823	79030015	Res,Fusible	2.2ohm	J 1/4W
! T801	79010025	Line Filter	183Y0R5	
! T802	79010026	Power Transformer	SRW3020ED5-210	
EU03	79081045	PC Board Assy	Front	
		- INTEGRATED CIRCUITS -		
IC101	79040160	IC	TMP87CH70BF-1A07	
		- TRANSISTORS -		
Q101	79050002	Transistor,Chip	RN1421	
		- DIODES -		
D102	79060022	Diode,Chip	1SS368	
D103	79060022	Diode,Chip	1SS368	
		- MISCELLANEOUS -		
A101	79089034	Display,FL	13-ST-42GNK	
BZ101	79089086	Buzzer	HAS-RP2-14-41-11	
MT101	79080140	Module,RMT	GP1U261X	
S105	79089020	Switch	Push	
S106	79089020	Switch	Push	
S107	79089020	Switch	Push	
S108	79089020	Switch	Push	
S109	79089020	Switch	Push	
S110	79089020	Switch	Push	
S111	79089020	Switch	Push	
S112	79089020	Switch	Push	
X101	79089095	Oscillator,Ceramic	8MHz	

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
EU04	79081046	PC Board Assy	Power Switch	
		- TRANSISTORS -		
Q107	79050001	Transistor,Chip	RN2402	
		- DIODES -		
D106	79060035	Diode,LED		
		- MISCELLANEOUS -		
S113	79089020	Switch	Push	
EU18	79081047	PC Board Assy	Disc LED	
		- TRANSISTORS -		
Q102	79050001	Transistor,Chip	RN2402	
Q103	79050001	Transistor,Chip	RN2402	
Q104	79050001	Transistor,Chip	RN2402	
Q105	79050001	Transistor,Chip	RN2402	
		- DIODES -		
D104	79060033	Diode,LED		
D105	79060033	Diode,LED		
EU05	79085044	PC Board Assy	Output	
		- INTEGRATED CIRCUITS -		
ICX03	79040229	IC	LA7106M-TLM	
ICX04	79040229	IC	LA7106M-TLM	
ICY01	79040240	IC	AD1854JRSRL	
ICY02	79040241	IC	R5510H020C-T	
ICY03	79040044	IC	NJM4580E	
ICY04	79040044	IC	NJM4580E	
ICY07	79089024	Terminal,Optical	TOTX178	
ICY08	79040240	IC	AD1854JRSRL	
ICY09	79040074	IC	TC74HCU04AF	
ICY11	79040044	IC	NJM4580E	
ICY12	79040044	IC	NJM4580E	
ICY13	79040241	IC	R5510H020C-T	
ICY16	79040166	IC	TC4S66F	
ICY17	79040166	IC	TC4S66F	
		- TRANSISTORS -		
QY01	79050012	Transistor,Chip	RN4601	
QY02	79050001	Transistor,Chip	RN2402	
QY03	79050001	Transistor,Chip	RN2402	
QY05	79050001	Transistor,Chip	RN2402	
QY06	79050001	Transistor,Chip	RN2402	
QY07	79050001	Transistor,Chip	RN2402	
QY08	79050012	Transistor,Chip	RN4601	
QY10	79050001	Transistor,Chip	RN2402	
QY12	79050012	Transistor,Chip	RN4601	
QY13	79050001	Transistor,Chip	RN2402	
QY15	79050043	Transistor,Chip	RN1402	
QY16	79050001	Transistor,Chip	RN2402	
QY18	79050001	Transistor,Chip	RN2402	
QY20	79050014	Transistor,Chip	HN1C03F	
QY21	79050014	Transistor,Chip	HN1C03F	
QY23	79050014	Transistor,Chip	HN1C03F	
QY24	79050014	Transistor,Chip	HN1C03F	
QY25	79050043	Transistor,Chip	RN1402	
QY27	79050014	Transistor,Chip	HN1C03F	
QY28	79050014	Transistor,Chip	HN1C03F	
QY29	79050001	Transistor,Chip	RN2402	
		- DIODES -		
DX01	79060028	Diode,Chip	1SS226	
DX02	79060028	Diode,Chip	1SS226	
DX03	79060028	Diode,Chip	1SS226	
DX04	79060028	Diode,Chip	1SS226	
DX09	79060028	Diode,Chip	1SS226	
DY01	79060022	Diode,Chip	1SS368	
DY02	79060022	Diode,Chip	1SS368	
DY03	79060022	Diode,Chip	1SS368	
DY04	79060022	Diode,Chip	1SS368	
DY06	79060022	Diode,Chip	1SS368	
DY07	79060022	Diode,Chip	1SS368	
DY08	79060022	Diode,Chip	1SS368	
DY10	79060022	Diode,Chip	1SS368	
		- CAPACITORS -		
CW01	79020102	Cap,Electrolytic	10MF	M 16V
CW02	79020102	Cap,Electrolytic	10MF	M 16V
CX06	79020109	Cap,Electrolytic	100MF	M 10V
CX07	79020109	Cap,Electrolytic	100MF	M 10V
CX08	79020109	Cap,Electrolytic	100MF	M 10V
CX09	79020109	Cap,Electrolytic	100MF	M 10V
CX11	79020109	Cap,Electrolytic	100MF	M 10V
CX12	79020109	Cap,Electrolytic	100MF	M 10V
CX14	79020109	Cap,Electrolytic	100MF	M 10V
CX15	79020109	Cap,Electrolytic	100MF	M 10V
CX16	79020109	Cap,Electrolytic	100MF	M 10V
CX17	79020109	Cap,Electrolytic	100MF	M 10V
CX18	79020109	Cap,Electrolytic	100MF	M 10V
CX20	79020109	Cap,Electrolytic	100MF	M 10V
CX22	79020109	Cap,Electrolytic	100MF	M 10V
CX23	79020109	Cap,Electrolytic	100MF	M 10V
CX24	79020110	Cap,Electrolytic	1000MF	M 10V
CX25	79020110	Cap,Electrolytic	1000MF	M 10V
CX26	79020110	Cap,Electrolytic	1000MF	M 10V
CX29	79020099	Cap,Electrolytic	470MF	M 6.3V
CX30	79020099	Cap,Electrolytic	470MF	M 6.3V
CY07	79020102	Cap,Electrolytic	10MF	M 16V
CY11	79020101	Cap,Electrolytic	220MF	M 10V
CY14	79020101	Cap,Electrolytic	220MF	M 10V
CY15	79020102	Cap,Electrolytic	10MF	M 16V
CY17	79020102	Cap,Electrolytic	10MF	M 16V
CY18	79020100	Cap,Electrolytic	47MF	M 10V
CY23	79020109	Cap,Electrolytic	100MF	M 10V
CY25	79020102	Cap,Electrolytic	10MF	M 16V
CY26	79020100	Cap,Electrolytic	47MF	M 10V
CY28	79020097	Cap,Film	1200pF	J 50V
CY31	79020097	Cap,Film	1200pF	J 50V
CY32	79020072	Cap,Film	1000pF	J 50V
CY33	79020101	Cap,Electrolytic	220MF	M 10V
CY34	79020109	Cap,Electrolytic	100MF	M 10V
CY38	79020072	Cap,Film	1000pF	J 50V
CY40	79020072	Cap,Film	1000pF	J 50V
CY41	79020096	Cap,Film	150pF	J 50V
CY43	79020072	Cap,Film	1000pF	J 50V
CY44	79020096	Cap,Film	150pF	J 50V
CY46	79020071	Cap,Film	220pF	J 50V
CY48	79020071	Cap,Film	220pF	J 50V
CY50	79020071	Cap,Film	220pF	J 50V
CY52	79020071	Cap,Film	220pF	J 50V
CY56	79020104	Cap,Electrolytic	47MF	M 10V
CY57	79020072	Cap,Film	1000pF	J 50V
CY60	79020104	Cap,Electrolytic	47MF	M 10V
CY61	79020072	Cap,Film	1000pF	J 50V
CY62	79020072	Cap,Film	1000pF	J 50V
CY63	79020072	Cap,Film	1000pF	J 50V
CY64	79020104	Cap,Electrolytic	47MF	M 10V
CY65	79020071	Cap,Film	220pF	J 50V
CY66	79020071	Cap,Film	220pF	J 50V
CY67	79020104	Cap,Electrolytic	47MF	M 10V
CY68	79020071	Cap,Film	220pF	J 50V
CY69	79020071	Cap,Film	220pF	J 50V
CY75	79020109	Cap,Electrolytic	100MF	M 10V
CY80	79020104	Cap,Electrolytic	47MF	M 10V
CY81	79020104	Cap,Electrolytic	47MF	M 10V
CY83	79020098	Cap,Film	4700pF	J 50V
CY84	79020098	Cap,Film	4700pF	J 50V
CY85	79020098	Cap,Film	4700pF	J 50V
CY87	79020098	Cap,Film	4700pF	J 50V
CY88	79020098	Cap,Film	4700pF	J 50V
CY89	79020098	Cap,Film	4700pF	J 50V
CY92	79020110	Cap,Electrolytic	1000MF	M 10V
CY93	79020110	Cap,Electrolytic	1000MF	M 10V
CY94	79020099	Cap,Electrolytic	470MF	M 6.3V
CY95	79020104	Cap,Electrolytic	47MF	M 10V
CY96	79020104	Cap,Electrolytic	47MF	M 10V
CY97	79020102	Cap,Electrolytic	10MF	M 16V
CY98	79020102	Cap,Electrolytic	10MF	M 16V
		- MISCELLANEOUS -		
JX01	79089096	Plate,Jack	Video-S	
JX02	79089097	Plate,Jack	Video	
JY01	79089098	Plate,Jack	2CH	
JY02	79089099	Plate,Jack	5.1CH	
JY03	79089100	Plate,Jack	Digital Audio	

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